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DRAFT ENVIRONMENTAL IMPACT STATEMENT

for the

PROPOSED LAND CONVEYANCE FOR CONSTRUCTION OF THREE FACILITIES

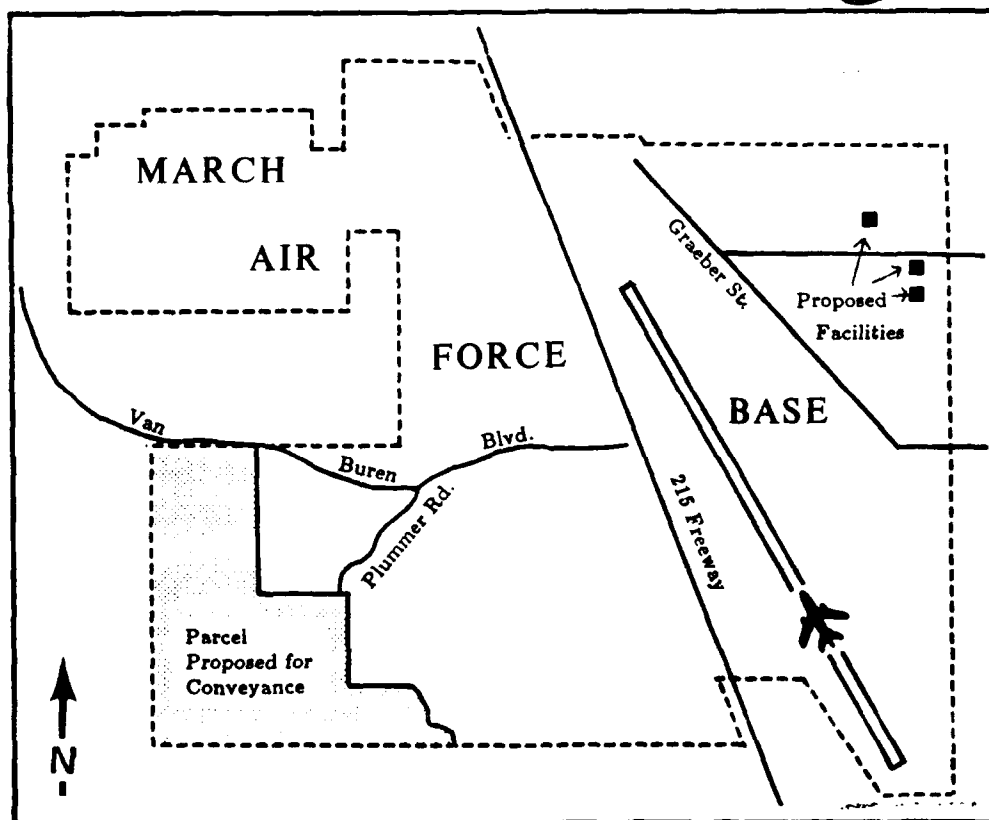
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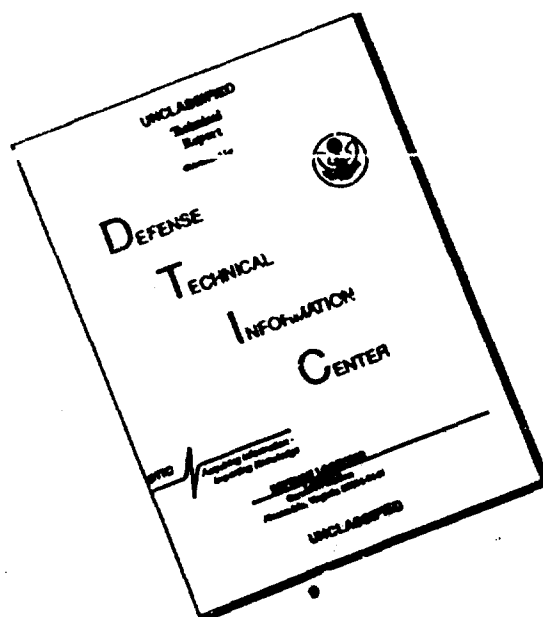
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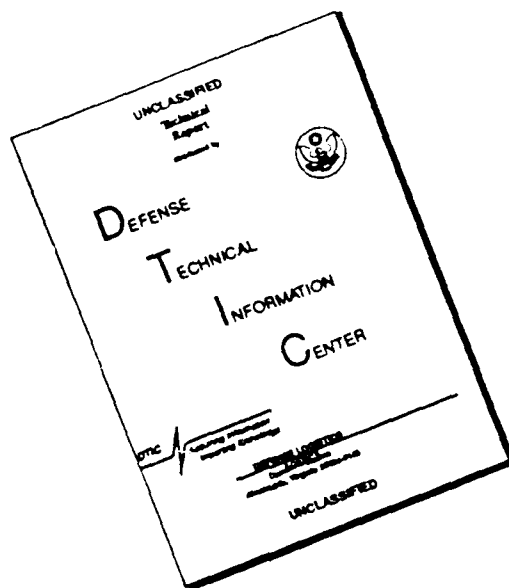
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DEPARTMENT OF THE AIR FORCE
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ENVIRONMENTAL IMPACT STATEMENT
FOR THE PROPOSED LAND CONVEYANCE FOR
CONSTRUCTION OF THREE FACILITIES
AT MARCH AFB, CA

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Abstract

This document analyzes the potential impacts of the proposed conveyance of 845 acres at March Air Force Base, California, to a private party in exchange for construction of three facilities elsewhere on the base. These facilities would be modern and efficient replacements for three existing facilities currently located on the 845-acre parcel to be conveyed: the Headquarters building of the 15th Air Force; the Non-commissioned Officers Professional Education Center; and the 15th Air Force Band Center. The Environmental Impact Statement (EIS) addresses both the impacts of constructing the new facilities on the Main Base and the impacts of probable development on the 845-acre West March parcel after it has been conveyed to a private party. Environmental effects with the potential for leading to significant impacts were identified in several issue areas and mitigation measures have been suggested that would reduce these impacts to levels that are not significant.

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LIST OF ABBREVIATIONS

ACM	Asbestos Containing Material
AFB	Air Force Base
AFR	Air Force Regulation
AICUZ	Air Installation Compatible Use Zone
AQMP	Air Quality Management Plan
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CNDDB	California Natural Diversity Data Base
CNEL	Community Noise Exposure Level
CONC	California Office of Noise Control
dB	Decibel
DEIS	Draft Environmental Impact Statement
DOD	Department of Defense
EIAP	Environmental Impact Analysis Process
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
FY	Fiscal Year
HEPA	High-efficiency Particulate Air
HQ	Headquarters
ICU	Intersection Capacity Unit
IRP	Installation Restoration Program
L_{dn}	Day/Night Average Sound Level
LOS	Level of Service
MFH	Military Family Housing
MOU	Memorandum of Understanding
MSA	Metropolitan Statistical Area
NCO	Non-commissioned Officer
NEPA	National Environmental Policy Act
ORNL	Oak Ridge National Laboratory
PCB	Polychlorinated Biphenyl
RSA	Regional Statistical Area
SAC	Strategic Air Command
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SKR	Stephens' Kangaroo Rat
UBC	Uniform Building Code
UCR	University of California, Riverside
USFWS	U.S. Fish and Wildlife Service
UST	Underground Storage Tank

DRAFT

**ENVIRONMENTAL IMPACT STATEMENT
FOR THE PROPOSED LAND CONVEYANCE FOR
CONSTRUCTION OF THREE FACILITIES
AT MARCH AFB, CA**

EXECUTIVE SUMMARY

The Strategic Air Command of the U.S. Air Force operates March Air Force Base (AFB), California, in support of its overall mission of maintaining the strategic security of the United States. March AFB is the location of the 22nd Strategic Refueling Wing, the 22nd Combat Support Group, the Headquarters of the 15th Air Force, and a number of other tenant organizations. The base is located southeast of the City of Riverside, and adjacent to the Cities of Moreno Valley and Perris, California. March AFB is situated in Riverside County, California, one of the fastest-growing urban areas in the nation.

The Air Force proposes to convey 845 acres of land comprising a portion of March AFB known as West March (west of I-215) to a private party in exchange for construction of three new facilities on the Main Base (east of I-215). These facilities would be modern and efficient replacements for three existing facilities currently located on the 845-acre parcel to be conveyed:

- o Headquarters building of the 15th Air Force;
- o Noncommissioned Officer Professional Education Center; and
- o 15th Air Force Band Center.

This Environmental Impact Statement (EIS) complies with the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations interpreting NEPA, and Air Force Regulation (AFR) 19-2 implementing NEPA for Air Force actions. The EIS addresses the environmental consequences of constructing the new facilities. It also evaluates the growth-inducement effects of future non-Air Force development on the 845-acre parcel. Since the precise pattern of this development cannot be foretold at this time, three development scenarios are evaluated:

- o Scenario I -- single-family residences and a neighborhood commercial center;
- o Scenario II -- mixed single-family and multi-family residences, a community commercial center such as could be anchored by a grocery store, and a neighborhood commercial center; and
- o Scenario III -- mixed single-family and multi-family residences, light industry or business park, a community commercial center, and a neighborhood commercial center.

This EIS provides an analysis of potential environmental impacts resulting from the proposed action and alternatives (including no action). Whenever possible, evaluation methodologies and criteria for judging significance were adapted from planning and environmental studies conducted and in current use by local government agencies. This study includes a discussion of the affected environment and expected impacts, as well as mitigation measures, for each of the following issue areas: land use; growth and housing; public services and finance; public health and safety; traffic; air quality; noise; geology and topography; soils; hydrology, groundwater, and water quality; vegetation; wildlife; and cultural resources.

Table S-1 summarizes the findings of the study. Environmental effects with the potential for leading to significant impacts were identified in several areas and mitigation measures that would reduce these impacts to a level of insignificance have been suggested. No significant impacts were found to be associated with construction of the three facilities on the base; the potential impacts identified would result from future development on the 845-acre parcel after it has been conveyed. Therefore, detailed development review and determination of specific mitigation requirements would be under the authority of state and local governments, and any necessary mitigation measures would be the responsibility of the private developer. Nevertheless, the Air Force may place certain restrictions on the proposed development, as part of the conveyance agreement, to ensure that such appropriate mitigation procedures are implemented.

Possible mitigations to be completed before or during development of the 845-acre parcel include: extension of water and sewage services to the site; construction of a new elementary school and/or mitigation fees to local school districts; proper disposal of potentially hazardous materials, specifically PCBs held in transformers, fuels leaked from underground storage tanks, and friable asbestos containing materials in existing buildings; improvements to the local transportation system; establishment of appropriate landscaping to protect soils and drainages; and yet to be determined mitigations for elimination of a small population of Stephens' kangaroo rat and 196 acres of its habitat.

Table S-1.
SUMMARY TABLE

<u>POTENTIAL IMPACT</u>	<u>EVALUATION OF SIGNIFICANCE</u>	<u>MITIGATION IDENTIFIED</u>	<u>RESIDUAL IMPACT</u>
<u>Land Use</u>			
Scenarios I, II, and III may conflict with Riverside County General Plan policies for water and sewer service, development with existing communities, and compatibility with existing development patterns.	Water and sewer services may not be "adequate and available" to the site at the time of development. Construction may be delayed on the land conveyance parcel until developer could obtain extension of services to the site.	Developer or local governments could initiate annexation or expansion of the sphere of influence of Riverside, Moreno Valley, or Perris to facilitate the purveyance of water and sewer services to the conveyance parcel.	Not significant: water and sewer capacity would become "adequate and available".
Scenarios I, II, and III are compatible with surrounding land uses and proposed development.	No adverse impact.	None required.	No adverse impact.
The three replacement facilities are consistent with existing and proposed land use plans for March AFB.	No adverse impact.	None required.	No adverse impact.
Development of the conveyance property would require conversion of locally important farmland.	Although potential agricultural acreage would be lost (483 acres were last leased in 1985 and are no longer farmed), the county specifies non-agricultural development for the area.	None required.	No adverse impact.

<u>POTENTIAL IMPACT</u>	<u>EVALUATION OF SIGNIFICANCE</u>	<u>MITIGATIONS IDENTIFIED</u>	<u>RESIDUAL IMPACT</u>
<u>Growth and Housing</u> Scenarios I, II, and III would provide 2,400, 3,500, or 3,300 housing units which would accommodate a population of between 7,000 and 11,000. Cumulative development of almost 5,000 additional units in the surrounding area would accommodate another 12,000 people.	No adverse impact: both project-related and cumulative housing and population growth are within the growth parameters identified by the Southern California Association of Governments	None required.	No adverse impact.
<u>Public Services and Finance</u> Over 1,100 additional elementary pupils expected in already overcrowded school facilities.	School districts are at capacity, state financing is limited, and use of local funding sources may impair elementary district finances.	Possible developer-financed construction of new elementary school; mitigation fees to local high school district could be made by private developer.	Not significant: local funding sources would not be affected.
<u>Public Health and Safety</u> PCBs, diesel fuel held in underground storage tanks (USTs), and asbestos may pose a hazard to public health and the environment as a result of potential contamination of soils, groundwater, or the air on the conveyance parcel.	Air Force study confirmed existence of soils contaminated by fuels, USTs that may further leak, and asbestos held in building materials that may contribute to further environmental contamination if not removed or treated properly.	Under supervision of the Air Force, developer could remove all known contaminated soil, empty contents of all USTs, and remove remaining USTs by EPA-recommended procedures. Further investigation of potentially contaminated soils is advised. When subsequent development would require destruction of buildings, remove asbestos-containing materials using EPA-recommended procedures.	Net beneficial impact. Provided recommended mitigations are executed, sources of potential contaminants would be removed and possibility of environmental contamination would be eliminated.

<u>POTENTIAL IMPACT</u>	<u>EVALUATION OF SIGNIFICANCE</u>	<u>MITIGATION IDENTIFIED</u>	<u>RESIDUAL IMPACT</u>
<u>Traffic</u>			
Construction of replacement facilities and development of the conveyed parcel would create a short-term increase in traffic flows.	Adverse but not significant.	Construction contractor could schedule workforce travel and deliveries of equipment and materials to avoid peak-hour traffic.	Not significant.
Increased long-term traffic in the vicinity of the conveyance parcel would lead to both capacity level-approaching volumes at some links and substantial decreases in the level of service (LOS) of associated intersections.	Potential adverse impact: excessive congestion of links and intersections in the land conveyance area.	County could require developer to improve the small tributaries leading into the project area and Van Buren Blvd, the adjacent main artery; add signals and turning lanes to intersections at these links; connect project area with major arteries planned to its north and south.	Not significant.
<u>Air Quality</u>			
Short-term dust and construction equipment emissions; long-term emissions from natural gas use and electricity generation, and vehicle emissions.	Not significant: project-related growth is within the parameters set by the South Coast Air Quality Management District in conjunction with the Southern California Association of Governments.	Contractor could implement site preparation dust and emission control measures, transportation measures to reduce emissions from vehicular traffic, energy conservation measures to reduce emissions, and other efficiency measures.	Not significant: short-term dust and construction equipment emissions would still occur. Long-term emissions from natural gas use, electricity generation and vehicle emissions would also still occur, but in smaller amounts if mitigations are implemented.
<u>Noise</u>			
Construction noise on proposed replacement facility sites and the land conveyance site may be obtrusive to those living or working nearby.	Not significant: impact is of a short-term, temporary nature.	Contractor could schedule construction activities between 8 am and 6 pm. Apply operative mufflers to construction equipment.	Not significant.

<u>POTENTIAL IMPACT</u>	<u>EVALUATION OF SIGNIFICANCE</u>	<u>MITIGATIONS IDENTIFIED</u>	<u>RESIDUAL IMPACT</u>
<u>Geology and Topography</u> Groundshaking poses the most significant seismic hazard for the sites.	Main Base shaking levels exceed UBC design for groundshaking which may lead to moderate property damage or loss of life; shaking at West March does not exceed UBC standards.	Construction contractors build to UBC requirements at West March and to higher standards at the Main Base to accommodate potential for groundshaking.	Not significant.
<u>Soils</u> Development on or near highly erosive soils at West March may exacerbate soil instability and erosion.	Vegetation removal, addition of water, and disturbance of soil may alter support abilities of soils and lead to failures. Soils of natural drainages will be vulnerable to erosion from increased runoff.	Developer could establish landscaping plan to replace disturbed soils with compacted material; protect cuts and fills on steep slopes; initiate immediate planting of deep-rooting groundcover, bermis, and installation of drains after construction on slopes; protect soils of natural drainages from excess runoff (lining, subdrains).	Not significant.
At the Main Base, no significant soil impacts are anticipated.	No adverse impact.	None required.	No adverse impact.

<u>POTENTIAL IMPACT</u>	<u>EVALUATION OF SIGNIFICANCE</u>	<u>MITIGATIONS IDENTIFIED</u>	<u>RESIDUAL IMPACT</u>
<u>Hydrology, Groundwater, and Water Quality</u> Development may alter hydrologic conditions and lead to decreased infiltration rates and increased runoff volumes on the conveyance parcel.	Additional runoff generated by impermeable surfacing or through irrigated landscaping may introduce erosion to ground surfaces and accelerate erosion along natural drainages. No adverse impact.	Developer could divert runoff from developed sites away from bare ground and natural drainages and convey offsite through drainage control systems (gutters, stormdrains). None required.	Not significant.
No significant hydrologic impacts are expected on the Main Base.	No adverse impact.	None required.	No adverse impact.
No significant impacts to groundwater or water quality are anticipated.	No adverse impact.	None required.	No adverse impact.
<u>Vegetation</u> Construction on project sites would eliminate existing vegetation.	Not significant: disturbed grassland and coastal sage scrub are not considered sensitive. No sensitive vegetation species has been observed at the site.	None required. If sensitive species are subsequently found on the conveyance parcel, developer can undertake preservation to the extent required by applicable state and federal law.	Not significant.

<u>POTENTIAL IMPACT</u>	<u>EVALUATION OF SIGNIFICANCE</u>	<u>MITIGATIONS IDENTIFIED</u>	<u>RESIDUAL IMPACT</u>
<u>Wildlife</u> Development of project sites would displace animals and birds and reduce foraging ranges.	The existence of small populations of Stephens' kangaroo rat (SKR), a federally proposed endangered species, and 196 acres of SKR habitat have been confirmed on the land conveyance parcel. Complete development on the site resulting in elimination of population and habitat would be a direct adverse impact.	The SKR is proposed for listing by the USFWS as a Federal endangered species. The Air Force has begun consultation with USFWS under Section 7 of the Endangered Species Act concerning whether the development would jeopardize the continued survival of the species. If the conclusion is that the species is not jeopardized, development will be allowed to proceed. In the alternative, Riverside County is proposing a program to fund protected habitats for viable SKR populations in return for a USFWS permit that would allow general development of land outside the protected sites.	Not significant.
<u>Cultural Resources</u> Development of the conveyance parcel would likely lead to the removal of the remains of Camp Haan; fate of the bedrock mortars on the site is uncertain.	Not significant: the Camp Haan remains represent only a small portion of its original area and provide little information which could not be acquired through written documents. Due to their widespread occurrence and limited informational value, the bedrock mortars are not considered significant sites.	None required.	Not significant.

1. INTRODUCTION

This Environmental Impact Statement (EIS) evaluates the potential impacts of the proposed conveyance of 845 acres at March Air Force Base (AFB), California, to a competitively selected private party in exchange for construction of three facilities at the Main Base. The study was prepared in compliance with Air Force Regulation (AFR) 19-2, which implements the National Environmental Policy Act (NEPA) PL 91-190, the President's Council on Environmental Quality (CEQ) regulations (40 CFR, parts 1500-1508), and Department of Defense (DOD) Directive 6050.1. The purpose of this EIS is to analyze whether the proposed Air Force action is likely to result in significant impacts to the human environment -- defined as the natural, or physical, environment and the relationship of people with that environment. Also included in the EIS is a discussion of the consequences of reasonable alternatives to the proposed action, and descriptions of suggested mitigation measures that would avoid or reduce adverse impacts on the environment.

1.1 PURPOSE AND NEED FOR ACTION

March AFB, California, is operated by the Strategic Air Command. Its principal missions are flying missions, including KC-135R tanker refueling aircraft. March AFB also is the site of the Headquarters (HQ) of the 15th Air Force of the Strategic Air Command. The administrative functions of the 15th Air Force are carried out in office facilities designed to support approximately 300 personnel. In addition, training facilities for noncommissioned officers (NCOs) and support facilities for the 15th Air Force band are located at March AFB. All these facilities are in need of substantial improvement and modernization to meet current requirements.

Military construction funds for this improvement are not likely to be available for at least five years. Higher priorities for appropriated military construction dollars have been established, and include direct mission-related improvements in flight line infrastructure, facilities for the storage of supplies and equipment, and other mission support functions. The proposed action provides a means of obtaining new replacement facilities without having to commit large amounts of appropriated funds and has the advantage of consolidating facilities at the base.

Recognizing Air Force requirements in the light of budget constraints, the National Defense Authorization Act, Fiscal Year 1987 (U.S. House of Representatives, 1986) specifically empowered the Secretary of the Air Force to undertake the land conveyance project. The act specified that the land be exchanged for construction of an NCO professional training center, a band center, and an addition to, or alteration of, the combat operations center (to house the Headquarters of the 15th Air force). The legislation further stipulated that the developer of the land submit a master plan for the parcel consistent with Air Force and local government goals and requirements. The act also directed the Secretary to conduct the conveyance using competitive procedures, and to apply any restrictions on the conveyance "appropriate to protect the interests of the United States."

1.2 SETTING AND SITE

March AFB is located immediately southeast of the City of Riverside in Riverside County, California (see Figure 1.2-1). The base is bordered on the northwest by the City of Riverside, on the west by unincorporated land under the jurisdiction of Riverside County, to the south by the City of Perris, and to the east and north by the City of Moreno Valley.

Interstate Highway 215 (I-215) splits the base into two parts. West March is that portion of the base to the west of I-215, and includes the 845-acre parcel to be conveyed as part of the proposed action (see Figure 1.2-2). West March also contains the military family housing (MFH) community known as Arnold Heights. In addition, West March contains the base golf course, the Veterans Administration National Cemetery, the site of Air Force Village West (a retirement village under development), and a 130-acre parcel currently proposed for private sector financed development of new MFH units. These new housing units would replace the older Arnold Heights community.

The Main Base (east of I-215) contains the flight line facilities used to support the base flying missions. The Main Base also contains the cantonment area for the base, including base administrative facilities, the flight operations center, dorms for unaccompanied enlisted personnel, welfare and recreation facilities, civil engineering and related support functions, the Air Force regional hospital, and the other major host and tenant activities of the base.

The communities surrounding March AFB are among the fastest-growing communities in the state and the nation. The City of Riverside, with a 1987 population of 199,000, has grown at an average annual rate of 2.2 percent in population since 1980. The newly incorporated City of Moreno Valley, with a 1987 population estimated at 79,300, has grown at an average rate of 17.8 percent per year since 1980. The City of Perris, with a 1987 population of 11,250, has grown at an average annual rate of 7.6 percent since 1980. The Riverside-Moreno Valley-Perris region is projected by the Southern California Association of Governments (SCAG) to grow at an average rate of 2.7 percent per year through 2000. Much of this growth is due to demands for housing for people employed in the major metropolitan job centers of Orange and Los Angeles counties.

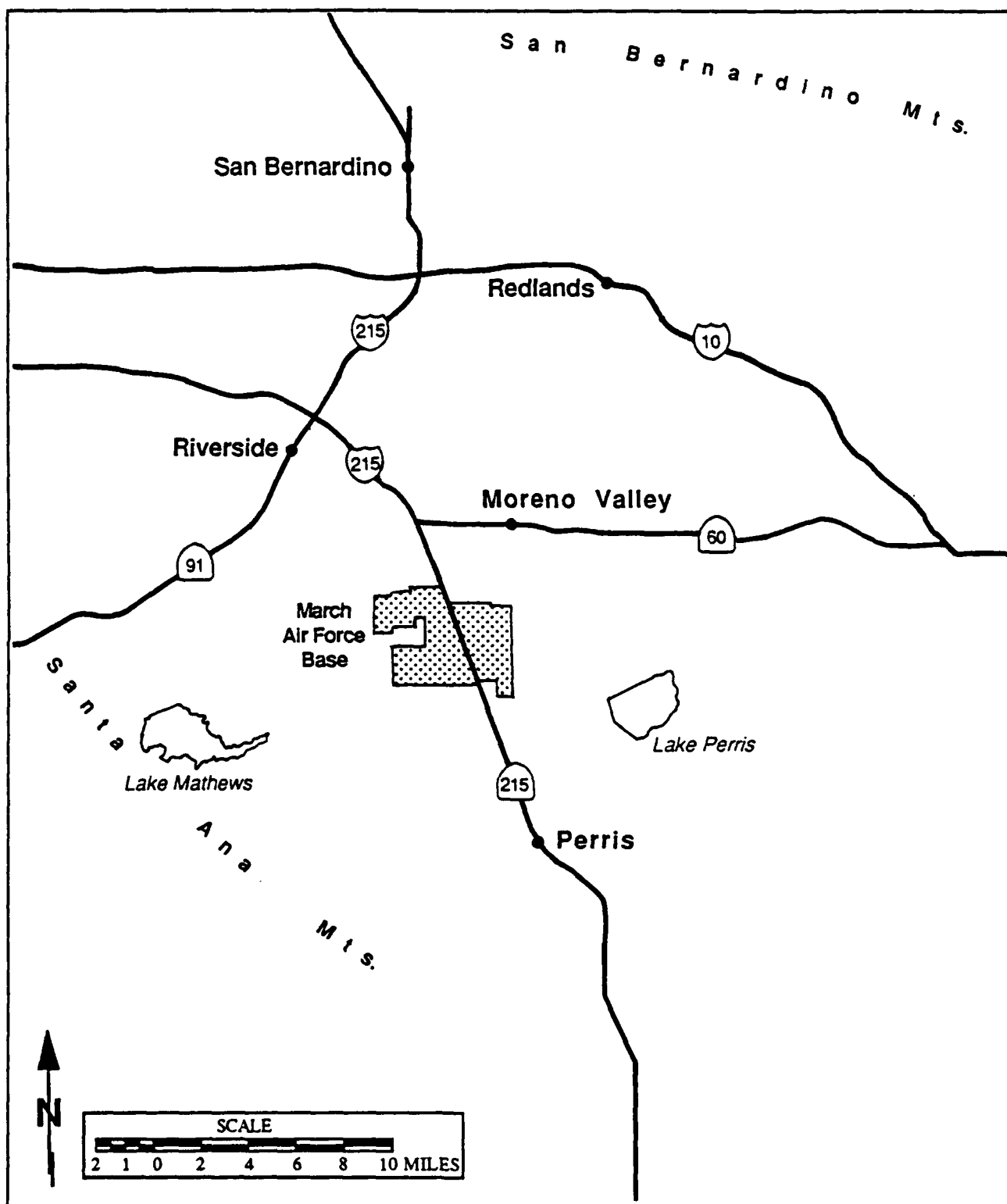


Figure 1.2-1
LOCATION OF MARCH AFB

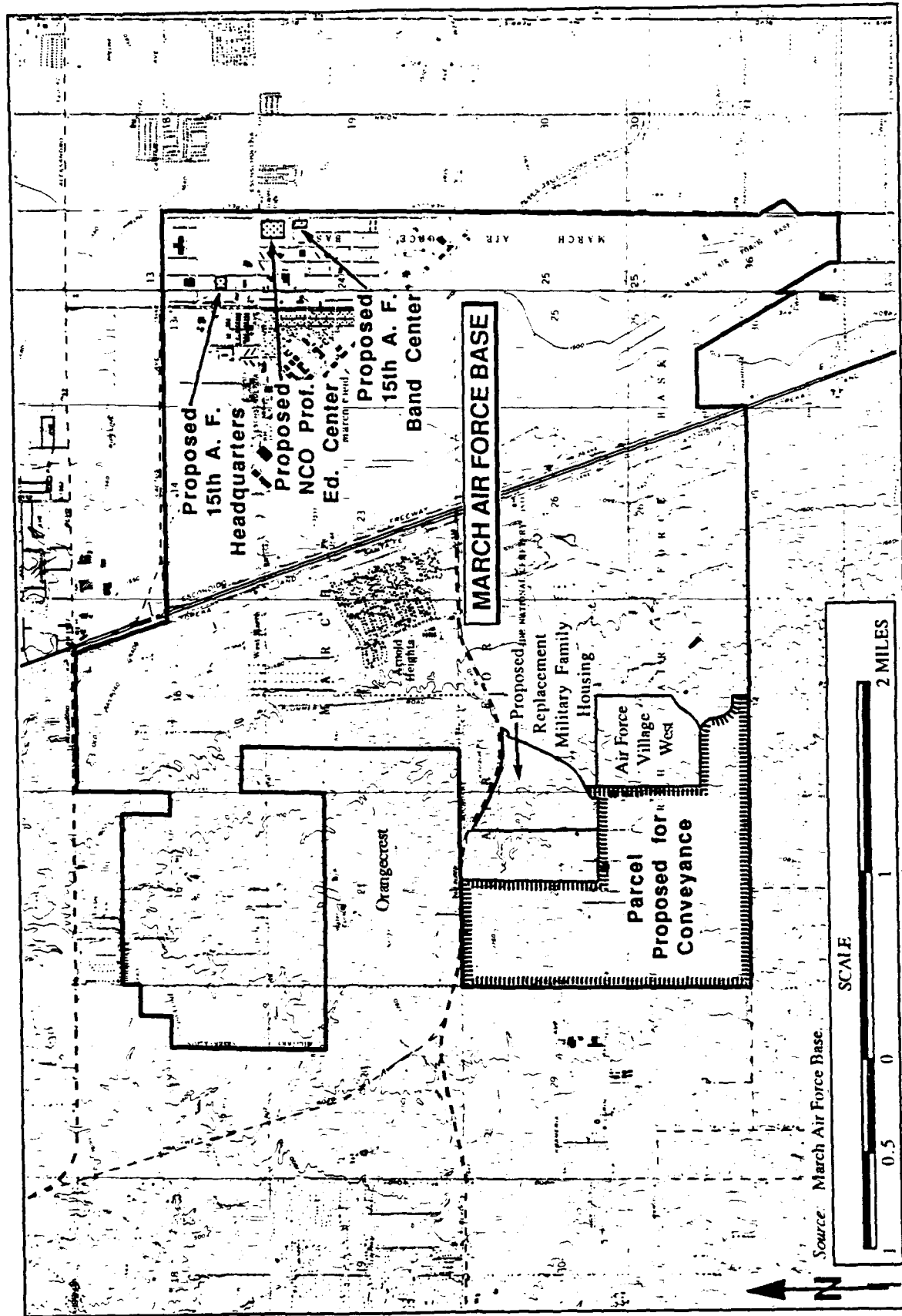


Figure 1.2-2
PROPOSED SITES FOR LAND CONVEYANCE AND REPLACEMENT FACILITIES

2. PROPOSED ACTION AND ALTERNATIVES

2.1 PROPOSED ACTION

In order to obtain adequate and modern facilities for HQ 15th Air Force activities, in light of the scarcity of military construction funds, the Air Force proposes to convey the 845-acre parcel of land on which the three present facilities are located to a private party. In consideration for this conveyance, the private party will construct, elsewhere on March AFB, three new facilities to replace the current inadequate facilities. Conveyance of the land would occur upon completion and acceptance of the new facilities.

The private party will be chosen through a competitive selection process designed by the U.S. government to "capture" the increasing value of land in the vicinity of March AFB. This selection process considers both the qualifications and bids of offerors. Qualifications of interested parties will be evaluated on the basis of their prior experience and current capabilities. The bid of an offeror is the sum of money the interested party commits in writing to pay to the U.S. Treasury in consideration for participation in the project. Among those offerors judged to be qualified, that offeror will be chosen whose firm bid is the highest.

This EIS addresses the impact of the proposed land conveyance in exchange for construction of the three facilities. These impacts are of two general types:

- (1) Impact of constructing the new facilities on the Main Base;
- (2) Probable impact of development on the 845-acre West March parcel after it has been conveyed to a private party. Since it is not possible to predict the precise uses to which the 845 acres would be put, this EIS addresses a range of potential land uses on the parcel.

NEPA and its implementing regulations generally have been interpreted to require the federal government to consider the environmental effects of its proposed actions to the extent that these effects can reasonably be predicted. In this case, the Air Force has a reasonable basis for speculating about the probable uses to which the 845 acres would be put. This EIS considers the consequences of those land uses. Detailed analysis of the specific plans of the developing party are beyond the scope of the Environmental Impact Analysis Process (EIAP) of the Air Force. This detailed development review is within the purview of the state and local government with jurisdiction over the parcel after it has been conveyed. Mitigations identified in this EIS and the Air Force's Record of Decision on the project may, at the option of the Air Force, be required of the private party in the real property transfer documents.

The California Environmental Quality Act (CEQA) establishes the process under which subsequent detailed environmental review would be conducted. CEQA and its implementing regulations are administered by state, county, municipal, and special district governments in California to assure that environmental considerations are addressed in planning decisions.

2.2 ACTIONS CONSIDERED FOR CUMULATIVE ANALYSIS

To assess cumulative impacts of the proposed action, the consequences of the project are placed in the context of other development in the vicinity. Specifically included are three development projects in the West March area. Just east of the land conveyance parcel, on what is currently government owned land, two projects are planned. The first is a retirement community which, if built as planned, would comprise a total of 942 units, including cottages, duplexes, apartments, and a skilled nursing facility. March AFB has conveyed a 153-acre parcel to the Air Force Village West Corporation for this development. The second project is a planned private sector financed military family housing development. For this project, March AFB would lease a 130-acre parcel to a private party for the development and operation of approximately 700 housing units. Directly north of the 845-acre parcel is the planned community of Orangecrest, comprising integrated residential, commercial, industrial, and support development over an area of 1,514 acres. Close to 4,500 residential units are planned as part of this development.

2.3 ALTERNATIVES TO THE PROPOSED ACTION

There are two alternatives to the proposed action:

- (1) **Construction of New Facilities Using Appropriated Funds.** Under this alternative, the Air Force would build the approved and modernized facilities at their proposed Main Base locations using traditionally obtained military construction funds. The environmental consequences for the Main Base of this alternative would be very similar to the effect of constructing the new facilities using the land conveyance approach, since the locations of the facilities and the facilities themselves would be identical in either case. However, such action would not require disposal or conveyance of the 845-acre parcel, and this land presumably would remain in the inventory of land managed by the Air Force at March AFB. Consequently, there would be no environmental impact associated with transferring ownership of the land.
- (2) **No Action.** Under the no action alternative, the Air Force would continue to use the existing facilities for their current purposes. Continued operation and maintenance of the facilities would keep them in usable condition, though no modernization or improvement would occur. There would be no environmental impacts either on the Main Base or West March.

2.4 COMPARATIVE ANALYSIS OF ALTERNATIVES

With regard to the environmental consequences of the traditionally financed alternative, any effects associated with constructing the new facilities would be essentially identical to those anticipated under the proposed action. The locations of the new facilities, their design, construction, and use would be the similar in either case. No significant environmental impacts are expected to result from building and operating the new facilities on the Main Base, regardless of how their construction is financed.

The traditionally financed alternative would not involve the conveyance of the 845-acre parcel of land, and, consequently, none of the environmental impacts associated with subsequent development of the land would occur. Although no unavoidable significant impacts of developing the conveyance parcel were identified in this study, mitigation measures would have to be adopted by the developer of the site in several key areas, such as public services, schools, potentially hazardous materials, traffic, and possibly with respect to the preservation of the Stephens' kangaroo rat. The appropriated fund approach would avoid these problems.

On the other hand, not conveying the land to finance the facility would have the disadvantage of delaying considerably the construction of the replacement facilities. It is estimated that appropriated funding for the project would not be available for at least five years. Adverse effects would accompany such a delay: the currently inadequate facilities would have to be maintained until new facilities were made available. This action would conflict with the land use directives of the Base Comprehensive Plan, which call for the consolidation of facilities on the Main Base; furthermore, it would likely delay the removal of potentially hazardous materials from the conveyance site.

The no action alternative would initiate no environmental consequences on either the Main Base or the West March land conveyance site. However, the adverse effects associated with delay of facility replacement identified above would remain in effect indefinitely.

3. AFFECTED ENVIRONMENT

3.1 LAND USE

March AFB is located in the Edgemont/Sunnymead Land Use Planning Area, the fastest growing area of Riverside County. Previously part of several large Spanish land grants subdivided and used for irrigated farming, western Riverside County today experiences the rapid expansion of suburbs, businesses, and industry into these former farmlands.

Residential and commercial land uses radiate from local growth centers. Industrial uses in the area include manufacturing, construction, and transportation. Mining operations, focused in Temescal Canyon ten miles west of March AFB, include the extraction of silica sand for glass, clay for drain pipe and bricks, and colored rock for composite shingles. Agricultural land uses -- citrus, deciduous fruits, hay, and grain -- are still important in the area (Soil Conservation Service, 1971).

March AFB, originally known as March Field, was activated as a "Winged Cavalry Post" in 1918, and became the first military air base established in the western U.S. The Strategic Air Command (SAC) assumed control of the base in 1949. The 7,900-acre base presently has a full complement of mission support facilities, administrative and community facilities, and many large vacant areas.

Land uses immediately surrounding March AFB include agriculture, light industry, single-family housing, and unused vacant land. Residential development is planned for much of the currently undeveloped land adjacent to the base.

3.1.1 Main Base

The Main Base, lying east of I-215, has the oldest and largest concentration of buildings at March. As the original core of March AFB, the Main Base contains the airstrip and supporting operations, and administrative, industrial, medical, and community facilities serving base personnel.

The selected locations for the three replacement facilities are shown relative to existing structures at the Main Base in Figure 3.1-1. The proposed location for the 15th Air Force Headquarters is a vacant lot adjoining the east side of South Riverside Drive, the primary road leading from the base's main gate. The new Headquarters would be located approximately one-quarter mile south of the main gate adjacent to the Combat Operations Center, administration and commercial buildings, and vacant land.

The proposed NCO Professional Education Center and the 15th Air Force Band Center are planned for a vacant 25-acre site on the west side of 8th Street, just south of Meyer Drive. The site is divided by a northwest-to-southeast trending drainage ditch into two equally sized parcels, and is surrounded by dormitories, the base commissary, an arts and crafts center, a baseball field, and a recreational vehicle park. Nearby offbase there is a mobile home park and vacant land planned for subdivision for housing units.

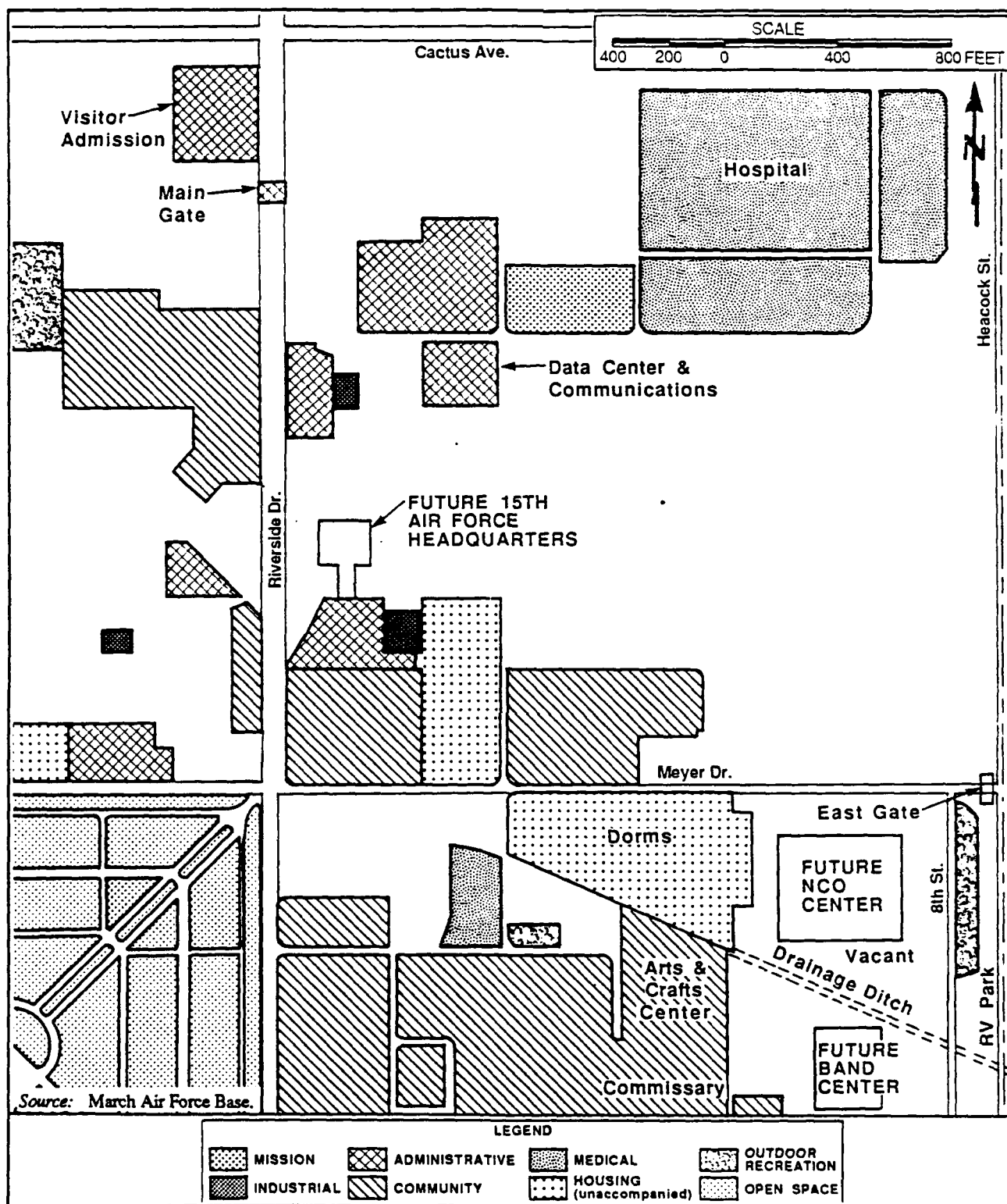


Figure 3.1-1
EXISTING LAND USE IN THE VICINITY OF THE REPLACEMENT FACILITIES

3.1.2 West March

West March comprises areas of the base west of I-215. Development of West March began at the outbreak of World War II with the establishment of Camp Haan, a large anti-aircraft training center. West March was not incorporated into the base until after the war (U.S. Air Force, 1985b). All that remains of Camp Haan today are concrete foundations. Current dominant land uses on West March are military family housing at Arnold Heights, the Veterans' Administration National Cemetery, a golf course, small arms firing range, wastewater treatment plant, and the original buildings that are proposed for replacement: the 15th Air Force Headquarters, the NCO Professional Education Center, and the 15th Air Force Band Center.

The 845 acres proposed for conveyance in exchange for the construction of three facilities is primarily vacant land. Eight buildings (including the facilities proposed for replacement) and a network of roads remaining from previous eras of base development exist on the site (see Figure 3.1-2). Parts of the property have been designated by the County of Riverside (1986a) as "locally important farmland" based on a 1982 compilation by the U.S. Soil Conservation Service, and in the past, this land has been dry-farmed for winter wheat and winter rye. Currently, however, none of the land is used for agriculture; it was last leased for farming in 1985.

The proposed conveyance property lies in the southwestern corner of March AFB. It is located in an unincorporated, rapidly-urbanizing section of Riverside County, southeast of the City of Riverside. Continued urban development is expected in this area due to its relatively lower land prices and close proximity to existing urban areas (County of Riverside, 1986a).

Land surrounding the site offbase is primarily agricultural, vacant, or rural residential (see Figure 3.1-2). Citrus groves line Barton Street except for a few small ranches south of Mariposa Avenue. Houses on 1-2 acre lots predominate along Nandina Avenue, with small ranches on 1-5 acres further south. North of Van Buren Boulevard, the land presently is largely vacant with the exception of a Christmas tree farm adjoining 20 acres of citrus groves at the intersection of Barton Street.

The proposed conveyance parcel is located directly south of the Orangecrest development, soon to be constructed. Orangecrest is a planned community integrating residential, commercial, industrial, and support uses over an area comprising 1,514 acres. Residential densities range from one to ten units per acre and total 4,487 units over 1,189 acres. The plan provides for 207 acres of industrial land, 52 acres of commercial land, and 15 acres of office buildings. The project includes two schools (one with an adjacent park), which total 25 acres; a 20-acre park; and a five-acre park. A library, fire station, and sewage treatment plant are also planned to be provided by the developer (S.I.C. Corporation, 1985). Currently, grading is in progress and models have been constructed.

Two development projects, one retirement housing and one military family housing, are planned for onbase vacant land east of the conveyance parcel (see Figure 3.1-2). The Air Force Village West Corporation intends to construct a 942-unit retirement community on a 153-acre parcel. This complex is designed for retired military personnel and will consist of duplexes, cottages, apartments, and a skilled nursing

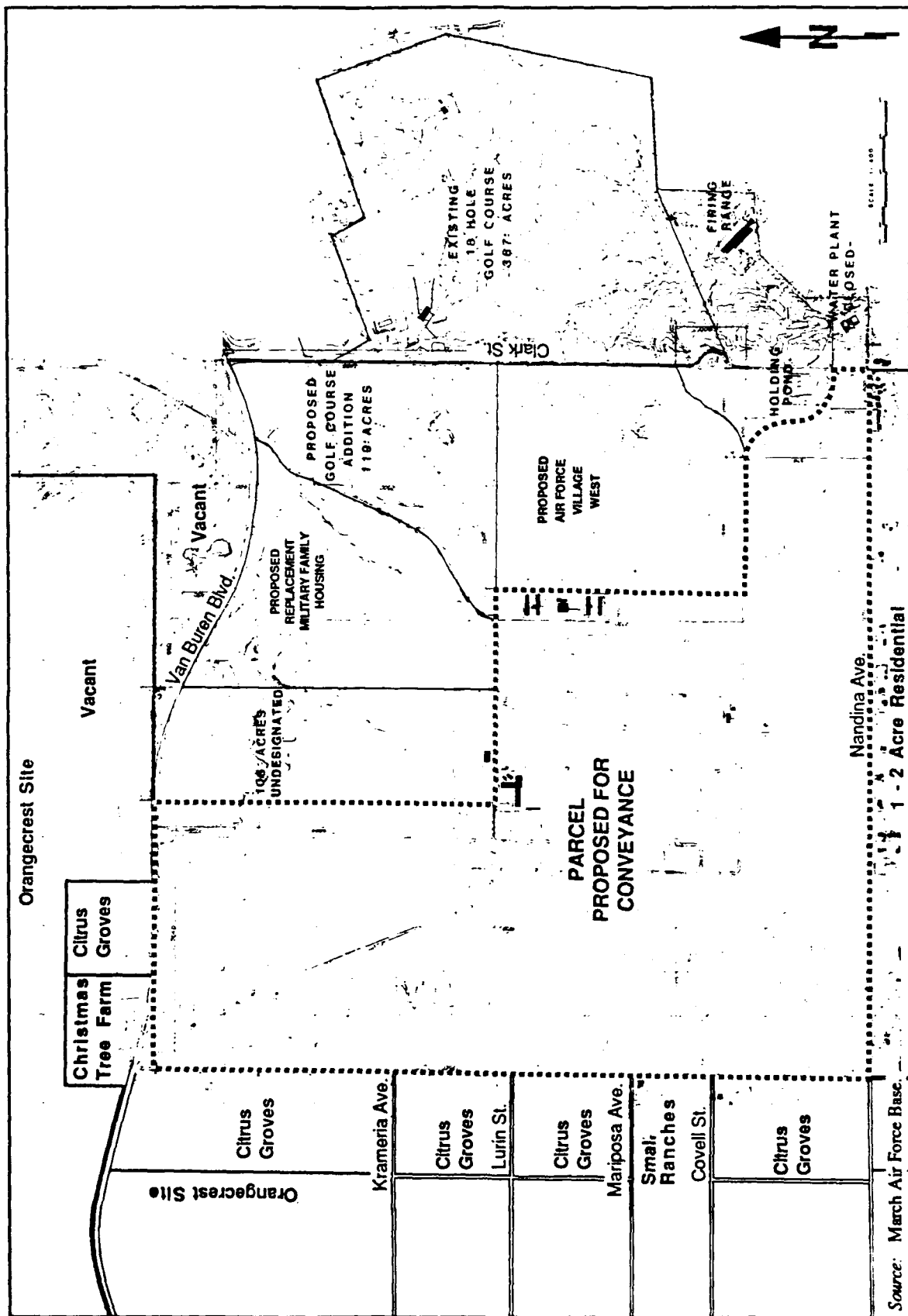


Figure 3.1-2
EXISTING AND PROPOSED LAND USES AT LAND CONVEYANCE SITE

facility. A private sector financed housing project is slated for development on another 130-acre parcel east of the conveyance property. This project will consist of approximately 700 affordable military family housing units that will replace substandard housing in the area known as Arnold Heights; the Arnold Heights housing would subsequently be demolished.

The proposed conveyance parcel, as well as the rest of March AFB, is contained within the southern portion of the Edgemont/Sunnymead Land Use Planning Area of the County of Riverside Comprehensive General Plan (1986a). This planning area is the fastest growing area within the County of Riverside. The current rural and largely undeveloped state of the conveyance parcel is considered by the County of Riverside a Category III land use (which includes rural, low density residential, agricultural, small-scale commercial, and/or light industrial activities). The site is presently zoned R-R (rural-residential); this zoning must be changed to accommodate potential higher density residential or commercial land uses on the site.

The general plan, outlining guidelines for future development, indicates specific land uses that the county foresees as logical development for each of its land use planning areas. For the Edgemont/Sunnymead Land Use Planning Area, the county considers Land Use Category II (urban: 2-8 units/acre) and Category I (heavy urban: 8-20 units/acre) as logical development patterns for economical and efficient urban expansion. Land Use Category III (rural, the current characterization of the parcel) is considered inappropriate within the portions of the Planning Area that are not designated as either open space or conservation areas. The proposed conveyance parcel is *not* designated as an open space or a conservation area. Therefore, development of the site as detailed in each of the three scenarios is consistent with county and planning area policies and trends for future growth. The General Plan policies and requirements that apply to potential Category I and II land uses on the site are briefly outlined in Table 3.1-1 (County of Riverside, 1986a).

Table 3.1-1
RIVERSIDE COUNTY COMPREHENSIVE GENERAL PLAN LAND USE POLICIES AND REQUIREMENTS
APPLICABLE TO POTENTIAL CATEGORY I AND CATEGORY II LAND USES

General Requirements for Development:

- o Water and sewer services must be "adequate and available" to the site.
- o The transportation/circulation system must be adequate, and a Category I use must be located near a major transportation route.

General Land Use Policies:

- o Locate development in existing communities.
 - o Development should be compatible with existing development pattern.
 - o Residential density is determined by category range, existing pattern, and site and service constraints.
 - o Residential lot sizes are reviewed for compatibility with the existing pattern of lot size.
 - o Residential density transfer is allowed between buildable portions of the site.
 - o Group commercial uses into centers.
 - o Strip commercial development is discouraged.
 - o Locate commercial and industrial uses on flat sites.
 - o Industrial uses are encouraged adjoining railroads, arterials, and noise-impacted areas.
 - o Industrial specific plans are encouraged for major industrial projects.
 - o Agriculturally productive lands are encouraged to remain in agricultural use.
 - o Planned communities should be a minimum of approximately 500 acres in size, represent a mix of land uses, and be self-supporting communities.
 - o A specific plan is required for a planned community.
 - o Circulation entries to the Moreno Valley community policy area should have landscaped medians, and heavy traffic should be kept out of residential neighborhoods. Walls should be screened with landscaping and healthy shade trees should remain. Tree replacement should be done at a ratio of 16 trees per acre.
-

3.2 GROWTH AND HOUSING

3.2.1 Main Base

March AFB has 3,565 active duty military personnel, over 1,039 Air National Guard personnel, 1,756 Air Force Reserves, 1,513 civilians, and 5,147 dependents of military personnel (March AFB Comptroller Division, 1987). Approximately 2,639 personnel and dependents live onbase in 711 military family housing units and 710 units of bachelor housing. There are an additional 232 units of visitors quarters.

3.2.2 West March

Riverside and San Bernardino Counties make up the Riverside-San Bernardino-Ontario Metropolitan Statistical Area (MSA), which is an economic planning unit defined by the U.S. Department of Labor. The majority of the people living in the two-county area reside in or near the cities of Ontario, Riverside, and San Bernardino. These cities are all located within approximately 20 miles of each other and they all have strong economic ties with one another.

3.2.2.1 Population

Growth in the region surrounding March AFB has been substantial since 1960. Riverside County's population has nearly tripled, from 306,191 in 1960 to 886,200 in 1987. The average annual growth rate in the county was 4.0 percent during this 27-year period. Table 3.2-1 indicates that the rate of population growth in Riverside County has been even faster in the past two years, with average annual growth rates of 4.7 percent in 1986 and 5.7 percent in 1987. San Bernardino County, which has approximately 30 percent more residents than Riverside County, has also experienced sizeable population increases in recent years.

The cities of Moreno Valley, Perris, and Riverside, all in the immediate vicinity of the base, make up approximately one-third of the total county population. Population growth from 1960 to 1987 in each of these cities is shown in Table 3.2-2. The City of Riverside, which is the largest city in the county, has a population of 199,000. Although the City of Riverside has grown at a steady pace, averaging 3.2 percent annually since 1960, both Perris and Moreno Valley have experienced much greater rates of population growth since 1980. Perris grew by over 6 percent between 1980 and 1986, and by 15.7 percent between 1986 and 1987. Moreno Valley had an average annual growth rate of 17.8 percent between 1980 and 1987.

Population growth projections for Regional Statistical Areas (RSAs) as defined by the Southern California Association of Governments (SCAG) are shown in Table 3.2-3. The City of Riverside and the surrounding urban and suburban areas are divided into three subunits labeled Riverside A, B, and C. The City of Moreno Valley is located within the Riverside A RSA subunit and the City of Riverside is located within the Riverside B RSA subunit. The City of Perris is located within the Perris RSA which covers a land area almost equal in size to the entire Riverside RSA (subunits A, B, and C).

Table 3.2-1
POPULATION GROWTH, COUNTIES OF RIVERSIDE
AND SAN BERNARDINO, 1960-1987

	<u>County of Riverside</u>		<u>County of San Bernardino</u>		<u>Riverside-San Bernardino Ontario SMSA</u>	
	<u>Population</u>	<u>Average Annual Growth Rate</u>	<u>Population</u>	<u>Average Annual Growth Rate</u>	<u>Population</u>	<u>Average Annual Growth Rate</u>
1960	306,191	N/A ¹	503,591	N/A	809,782	N/A
1970	456,916	4.1%	682,233	3.1%	1,139,147	3.5%
1980	663,923	3.8%	895,016	2.8%	1,558,939	3.2%
1985	800,900	3.8%	1,062,700	3.5%	1,863,600	3.6%
1986	838,500	4.7%	1,110,500	4.5%	1,949,000	4.6%
1987	886,200	5.7%	1,167,200	5.1%	2,053,400	5.4%

¹ Not applicable.

Sources: California Department of Finance, 1987a; County of Riverside, Department of Economic and Community Development, 1987; U.S. Department of Commerce, Bureau of the Census, 1983.

Table 3.2-2
POPULATION GROWTH, CITIES OF MORENO
VALLEY, PERRIS, AND RIVERSIDE, 1960-1987

	<u>City of Moreno Valley</u>		<u>City of Perris</u>		<u>City of Riverside</u>	
	<u>Population</u>	<u>Average Annual Growth Rate</u>	<u>Population</u>	<u>Average Annual Growth Rate</u>	<u>Population</u>	<u>Average Annual Growth Rate</u>
1960	13,291	N/A ¹	2,950	N/A	84,332	N/A
1970	18,871	3.6%	4,228	3.7%	140,089	5.2%
1980	25,150	2.9%	6,740	4.8%	170,876	2.0%
1985	58,000	18.2%	9,100	6.2%	186,600	1.8%
1986	65,400	12.8%	9,725	6.9%	192,200	3.0%
1987	79,300	21.3%	11,250	15.7%	199,000	3.5%

¹ Not applicable.

Sources: California Department of Finance, 1987a; U.S. Department of Commerce, Bureau of the Census, 1983.

Table 3.2-3
POPULATION GROWTH, REGIONAL STATISTICAL AREAS
OF RIVERSIDE, RIVERSIDE A, AND PERRIS, 1970-2000 [1]

	<u>Riverside</u>		<u>Riverside A [1]</u>		<u>Perris</u>	
	<u>Population</u>	<u>Average Annual Growth Rate</u>	<u>Population</u>	<u>Average Annual Growth Rate</u>	<u>Population</u>	<u>Average Annual Growth Rate</u>
1970	222,000	N/A[2]	N/A	N/A	23,000	N/A
1980	285,000	2.5%	28,000	N/A	43,000	6.5%
1985	335,000	3.2%	48,000	11.4%	54,000	4.7%
1990	392,000	3.2%	66,000	6.9%	66,000	4.1%
1995	445,000	2.6%	85,000	5.2%	77,000	3.1%
2000	493,000	2.1%	102,000	3.7%	87,000	2.5%

[1] The Riverside A RSA subunit is synonymous with the County of Riverside Edgemont/Sunnymead Planning Area.

[2] Not applicable or not available.

Sources: Southern California Association of Governments, 1982; County of Riverside, 1986b.

3.2.2.2 Employment

The unemployment rate in Riverside County has declined steadily from a peak in 1982, when 12.9 percent of the 271,500 people in the labor force were without jobs. Table 3.2-4 indicates that the number of people in the labor force in Riverside County grew to 367,300 by 1986, and the unemployment rate dropped to 7.2 percent. Although the labor force has grown by over 35 percent in this 4-year period, there were 8,700 fewer people unemployed in 1986 than in 1982 within the county. The unemployment rate in San Bernardino County has followed the same trend as the fluctuation in Riverside County, with a peak of 11.6 percent in 1982. Since 1980, the unemployment rate in San Bernardino County has remained between 1.0 and 1.7 percentage points below the rate in Riverside County.

3.2.2.3 Housing

The housing stock in Riverside County has increased substantially to accommodate the population growth over the past three decades. Table 3.2-5 indicates that the county's housing stock has more than doubled between 1970 and 1985. Housing stock estimates for the Riverside and Perris RSAs, indicate that over 40 percent of the county housing stock is located within these two RSAs. Housing growth is projected to outpace population growth slightly between now and the year 2000 as average household sizes decline.

The housing vacancy rate in Riverside and San Bernardino Counties was 4.9 percent in 1986 (Federal Home Loan Bank of San Francisco, 1986). Single-family detached housing vacancy rates were 3.4 percent during that year, while single-family attached units (including duplexes, townhouses, and row houses) had rates of 8.1 percent. Multi-family housing vacancy rates were 9.5 percent in 1986 in the two-county area. Between 1978 and 1985, the vacancy rate averaged 3.7 percent with a high of 4.4 percent and a low of 3.3 percent.

Table 3.2-4
EMPLOYMENT AND UNEMPLOYMENT,
COUNTIES OF RIVERSIDE AND SAN BERNARDINO, 1980-1987

	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>
<u>Riverside County</u>							
Labor Force	251,200	260,300	271,500	304,300	322,500	337,200	367,300
Employment	230,400	236,300	236,400	270,700	294,700	310,000	340,900
Unemployment	20,800	24,000	35,100	33,600	27,800	27,200	26,400
Unemployment Rate	8.3%	9.2%	12.9%	11.0%	8.6%	8.1%	7.2%
<u>San Bernardino County</u>							
Labor Force*	335,600	346,400	361,000	401,500	422,900	441,300	484,300
Employment	311,000	318,900	319,000	364,300	391,900	412,400	456,100
Unemployment	24,600	27,500	42,000	37,200	31,000	28,900	28,200
Unemployment Rate	7.3%	7.9%	11.6%	9.3%	7.3%	6.5%	5.8%
<u>Riverside-San Bernardino-Ontario MSA</u>							
Labor Force	586,200	604,000	632,500	705,800	745,400	778,500	851,600
Employment	541,500	553,300	555,400	635,100	686,600	722,400	797,000
Unemployment	44,700	50,700	77,100	70,700	58,800	56,100	54,600
Unemployment Rate	7.6%	8.4%	12.2%	10.0%	7.9%	7.2%	6.4%

Source: California Employment Development Department, 1987.

Table 3.2-5
HOUSING GROWTH, REGIONAL STATISTICAL AREAS
OF RIVERSIDE, RIVERSIDE A, AND PERRIS, 1970-2000 [1]

	<u>Riverside</u>		<u>Riverside A [1]</u>		<u>Perris</u>	
	<u>Housing</u>	<u>Average Annual Growth Rate</u>	<u>Housing</u>	<u>Average Annual Growth Rate</u>	<u>Housing</u>	<u>Average Annual Growth Rate</u>
1970	70,000	N/A[2]	N/A	N/A	10,100	N/A
1980	100,000	3.7%	10,000	N/A	20,000	7.1%
1985	122,000	3.9%	18,000	12.5%	26,000	5.4%
1990	146,000	3.7%	26,000	6.6%	31,000	3.6%
1995	168,000	2.8%	33,000	4.9%	37,000	3.6%
2000	188,000	2.3%	40,000	3.9%	42,000	2.6%

[1] The Riverside A RSA subunit is synonymous with the County of Riverside Edgemont/Sunnymead Planning Area.

[2] Not applicable or not available.

Source: Southern California Association of Governments, 1982.

3.3 PUBLIC SERVICES AND FINANCE

3.3.1 Main Base

As previously noted, the Main Base is located east of the freeway and contains the flight line facilities and most of the major functions supporting the base. The primary public services and utilities serving the base, including security police, fire protection, and crash support for aircraft, are managed by base personnel. Solid waste removal is provided by a local contractor, while hazardous waste is managed cooperatively with nearby Norton AFB. Electric power is supplied by the Southern California Edison Company, natural gas from Southern California Gas Company, and water is obtained from the Eastern Municipal Water District. Sewage treatment is provided by base facilities.

3.3.2 West March

The 845-acre parcel proposed for conveyance to private ownership lies within the jurisdiction of the County of Riverside, the Val Verde Elementary School District, the Perris Union High School District, and certain other special districts in the area. The property is located in an unincorporated portion of the County of Riverside. Although the parcel is not identified by any local general plans as being located within the sphere of influence of a city, it is possible, based on previous actions in the area, that annexation of the property by the City of Riverside could occur. Conversations with local planners indicate that annexation by the City of Perris is unlikely and the City of Moreno Valley is even less likely. The City of Perris provides services to the south of the tract, but is farther away than the Orangecrest site -- recently made part of the City of Riverside. Moreno Valley is to the northeast, on the opposite side of the Main Base, and is not contiguous to the tract. If the area is not annexed by a local city, the county would provide the principal public services to the residents (i.e., law enforcement, fire protection, and road maintenance services). If the area is incorporated, the annexing city would provide these principal services. The Western Municipal Water District would provide water supply and distribution services to any development on the property, regardless of whether or not the site is annexed by a local city. If the tract is annexed by the City of Riverside, sewer services may be provided by the City; if not, Western Municipal Water District is the oversight agency.

The property is located in county tax rate areas 98-004 and 98-008 with current property tax rates of \$1.04908 per \$100 of assessed valuation. This rate includes \$1.0000 for general county purposes, of which the county distributes \$0.00098875 to the Val Verde Elementary School District, and \$0.00979299 to the Perris Union High School District. If the tract were annexed by the City of Riverside, that government would share in the \$1.00 collected by the county, in an amount of \$0.02410058. The other component of the tax rate, \$0.04908, is used to pay debt service for pre-Proposition 13 bonds. Of this latter component, \$0.03206 is for debt service for the Val Verde Elementary School District, \$0.00222 is for the Perris Union High School District, and the remainder is for other taxing jurisdictions.

The other major local tax in California is the 1.25 percent local sales and use tax, an add-on to the state 4.75 percent sales and use tax. Eighty percent of the collections (or 1.00 percent of total taxable sales and use) within municipal

boundaries are returned to the cities; in unincorporated areas, this is returned to the county. The other 0.25 percent is allocated to both incorporated and unincorporated areas on the basis of population and is restricted for spending on highway or transit uses only. Several state taxes are subvented, in part, to local jurisdictions. These include funds from motor vehicle registrations, cigarette tax, and motor fuel taxes. For fiscal 1986, motor fuel users tax distributions amounted to \$7,950,208 for the County of Riverside and \$2,699,323 for the City of Riverside. For counties, these distributions are based on several factors including population, registrations, road mileage, and taxable property value. For cities, distributions are primarily population-related. Unlike the local sales taxes, these funds are not apportioned to counties and then divided among municipalities and the unincorporated county areas, but instead are distributed among counties and cities separately. Moreover, these motor fuel distributions are restricted for spending on roads only. Cigarette tax and motor vehicle registration subventions are distributed based on population, but are not earmarked for any specific uses.

The following briefly describes existing service levels and financial characteristics of the County and City of Riverside, City of Perris, Val Verde Elementary and Perris Union High school districts, and the Western Municipal Water District.

3.3.2.1 County of Riverside

The County of Riverside provides a variety of services to residents of both incorporated and unincorporated areas. Expenditures of all county governmental funds amounted to \$508 million in FY 1986 (see Table 3.3-1). Governmental fund revenues amounted to approximately \$497 million over the same period. Tax revenue accounted for approximately \$128 million of the total (26 percent) while inter-governmental revenues accounted for \$270 million (54 percent). Revenues from fines, fees, charges for services, and other miscellaneous sources accounted for the remaining revenue sources (20 percent). Fund balances amounted to approximately \$260 million by the end of the year, representing approximately one-half of the county's total governmental fund operating expenditures.

Revenues and expenditures of the county's general fund were approximately \$374 million, representing about three-quarters of all governmental fund revenues and expenditures in FY 1986. Budgeted general fund revenues and expenditures for FY 1987 are approximately \$433 million, representing a 16 percent increase over actual FY 1986 levels. Assessed value of property (net of exemptions) in the county was approximately \$32.9 billion in FY 1986.

The Riverside County Sheriff Office budgeted \$20,652,053 for response services in FY 1987, in support of 414 sworn officers. The service area for the sheriff patrol services includes unincorporated Riverside County and several contract sites including La Quinta, Lake Elsinore, Moreno Valley, Norco, Desert Hot Springs, Rancho Mirage, Cathedral City, Palm Desert, and Indian Wells. According to the State of California Department of Finance, the combined population of the service area at the beginning of calendar year 1987 was 515,790, out of a total Riverside County population of 886,200.

The Riverside County Fire Department provides basic fire suppression services to unincorporated areas of the county and several contract cities. Emergency medical

Table 3.3-1
COMBINED STATEMENT OF REVENUES, EXPENDITURES AND CHANGES IN FUND BALANCE - COUNTY OF RIVERSIDE
ALL GOVERNMENTAL FUND TYPES FOR THE YEAR ENDED JUNE 30, 1986

	GENERAL	SPECIAL REVENUE	DEBT SERVICE	CAPITAL PROJECTS	TOTAL
REVENUES:					
Taxes	\$97,450,508	\$27,408,466	\$2,708,532		\$127,567,506
Licenses, permits & franchises	11,905,919	1,354,144		2,175,128	15,435,191
Fines, forfeitures, & penalties	5,261,786	2,647,761			7,909,547
Revenues from use of money & property:					
Interest	11,457,347	2,776,709	2,093,196	6,409,407	22,736,659
Rents & concessions	389,272	2,437,971			2,827,243
Aid from other governmental agencies:					
State	137,623,823	14,720,753	118,887	527,197	152,990,660
Federal	77,969,718	36,337,245	2,731,220		117,038,183
Charges for current services	31,394,951	14,404,798	8,486		45,808,235
Other revenue	454,651	3,792,102	5,599	238,688	4,491,040
Total	\$373,907,975	\$105,879,949	\$4,934,700	\$12,081,640	\$496,804,264
EXPENDITURES:					
General government	37,996,599	12,828,772			50,825,371
Public protection	122,786,435	31,017,998			153,804,433
Public ways & facilities		31,846,419			1,846,419
Health sanitation	49,518,001				49,518,001
Public assistance	156,637,366	23,189,288			179,826,654
Education	311,075	3,518,800			3,829,875
Recreation & cultural services	2,906,605	754,746			3,661,351
Capital outlay				17,387,354	17,387,354
Debt service:					
Principal retirement	977,016	75,293	4,010,000		5,062,309
Interest	3,607,035	5,799	8,304,137		11,926,971
Total	374,740,132	103,247,115	12,314,137	17,387,354	507,688,738
REVENUES OVER (UNDER) EXPENDITURE	(832,157)	2,632,834	(7,379,437)	(5,305,714)	(10,884,474)
OTHER FINANCING SOURCES (USES):					
Operating transfers in				64,709,241	64,709,241
Operating transfers out	(3,115,140)	(1,263,004)		(60,331,097)	(64,709,241)
Issuance of bonds				168,044,800	168,044,800
Total other financing sources (uses)	(3,115,140)	(1,263,004)		168,044,800	168,044,800
REVENUES & OTHER SOURCES OVER (UNDER) EXPENDITURES & OTHER USES	(3,947,297)	1,369,830	57,329,804	102,407,989	157,160,326
FUND BALANCE, JULY 1, 1985, AS ADJUSTED	34,739,220	48,672,502	8,468,346	10,825,926	102,705,994
FUND BALANCE, JUNE 30, 1986	\$30,791,923	\$50,042,332	\$65,798,150	\$113,233,915	\$259,866,320

Source: County of Riverside, Assessor's Office, 1986b.

services, however, are not provided. The fire department estimates operating costs, including 24-hour coverage by two full-time equivalent firefighters and annualized vehicle costs at \$440,000 for every 2,000 dwelling units or 3.5 million square feet of commercial or industrial floor area of new development. There are also station mitigation fees of \$400 per residential dwelling unit and \$0.25 per square foot of commercial or industrial floor area of new development.

Riverside County provides solid waste landfills at an estimated cost of \$12,264,800 for FY 1986. This is an enterprise fund substantially supported by service charges. Collection in municipalities or other areas is provided by private contractors. A number of trash collection companies compete for trash hauling services in the county.

3.3.2.2 City of Riverside

Governmental fund revenues of the City of Riverside amounted to approximately \$102 million in FY 1986 (see Table 3.3-2) representing an increase of 20 percent over FY 1985 levels. Tax revenues accounted for \$40 million (39 percent) of the total while intergovernmental revenues accounted for \$24 million (24 percent). Expenditures over the same period amounted to \$117 million. Fund balances as of the end of FY 1986 amounted to \$76 million, representing approximately two-thirds of the governmental fund operating expenditures in that year. General fund revenues and expenditures were approximately \$59 million and \$56 million, respectively, in FY 1986, representing slightly over one-half of all governmental fund revenues and expenditures in that year. Assessed value of property within the city limits amounted to \$4.3 billion (net of exemptions) in FY 1986.

The City of Riverside Police Department, which would provide law enforcement services if the area were annexed, has a \$21.4 million budget in support of approximately 390 full-time equivalent personnel. Patrol services constitute the largest program in the department with an estimated FY 1987 budget of \$8.165 million in support of 131 uniformed personnel. Staffing is based upon three ten-hour shifts with a six-hour night-time overlap which provides more officers during peak demand times.

The City of Riverside Fire Department has an \$11.3 million budget in support of approximately 186 full-time equivalent personnel of firefighters and office staff. Fire suppression and emergency assistance services account for \$9.863 million of the total departmental budget and current staffing is approximately 166 firefighters. The department maintains 10 fire stations, 47 vehicles, one training facility, and one maintenance shop.

As noted above, under the annexation scenario, the city may provide sewerage services; otherwise, Western Municipal Water District would be the likely purveyor. Sewerage system service costs of the City of Riverside are estimated at approximately \$6.1 million in FY 1986, up from \$4.6 million in FY 1985. The sewerage system provides collection, treatment, and disposal of all wastewater generated within the city. Treatment also includes the primary, secondary, and tertiary processing of all wastewater from the Jurupa and Rubidoux Community Services Districts. All sewer lines are programmed to be cleaned a minimum of once every 3 to 4 years. Recently, there have been an increased number of stoppages in line

Table 3.3-2
COMBINED STATEMENT OF REVENUES, EXPENDITURES AND CHANGES IN FUND BALANCES - CITY OF RIVERSIDE
ALL GOVERNMENTAL FUND TYPES FOR THE FISCAL YEAR ENDED JUNE 30, 1986

	GENERAL	SPECIAL REVENUE	DEBT SERVICE	CAPITAL PROJECTS	FY 1986	FY 1985
REVENUES:						
Property taxes	\$5,342,851	\$1,333,941	\$3,894,357	\$0	\$10,571,149	\$9,489,944
Other taxes	28,961,031	0	0	0	28,961,031	26,361,843
Special assessments	0	0	171,966	0	171,966	178,994
Licenses & permits	3,128,675	0	0	3,246,283	6,374,958	6,709,232
Fines & forfeits	441,975	1,186,906	0	0	1,628,881	1,632,195
Use of money & property	2,631,282	686,582	5,643,140	2,998,522	11,959,526	8,852,846
Intergovernmental revenues	7,206,317	14,508,334	80,805	2,642,681	24,438,137	17,976,085
Charges for service	3,122,536	75,220	0	0	3,197,756	3,101,677
Utility contributions	7,204,742	0	0	0	7,204,742	6,666,838
Miscellaneous revenues	1,124,868	21,848	0	6,540,795	7,687,511	4,299,494
Total Revenues	59,164,277	17,812,831	9,790,268	15,428,281	102,195,657	85,269,148
EXPENDITURES:						
Current:						
General government	7,756,221	1,042,406	155,549	7,252,016	16,207,212	7,715,610
Public safety	27,726,946	2,590,286	0	0	30,317,232	28,312,908
Highways & streets	8,257,002	1,916,906	0	176,078	10,349,986	10,009,731
Culture & recreation	8,955,674	6,266,037	0	0	15,221,711	13,543,140
Lease payments	1,275,943	126,110	0	0	1,402,053	1,234,864
Capital outlay	1,748,493	6,247,689	0	26,299,831	34,296,013	27,738,136
Debt service:						
Principal retirement	0	0	3,068,730	0	3,068,730	1,939,898
Interest	0	0	6,199,850	0	6,199,850	4,774,366
Total Expenditures	55,720,279	18,189,434	9,425,129	33,727,945	117,062,787	95,268,653
Excess Revenue Over (Under) Expenditures	3,443,998	(376,139)	365,139	(18,299,664)	(14,867,130)	(9,999,505)
OTHER FINANCING SOURCES (USES):						
Bond sale proceeds	0	0	0	31,720,000	31,720,000	6,300,000
Operating transfer in	0	2,037,024	6,308,206	280,070	8,625,300	585,280
Operating transfer out	(1,771,510)	(250,488)	0	(6,972,403)	(8,994,401)	(968,951)
Prior period adjustment	0	3,488,259	(11,182)	2,634,431	6,111,508	0
Total other financing sources (uses)	(1,771,510)	5,274,795	6,297,024	27,662,098	37,462,407	5,916,689
EXCESS REVENUES & OTHER SOURCES OVER (UNDER) EXPENDITURES & OTHER USES	1,672,488	4,898,192	6,662,163	9,362,434	22,595,277	(4,082,816)
FUND BALANCES - JULY 1	8,770,129	3,042,895	19,404,439	22,004,058	53,221,521	57,304,337
FUND BALANCES - JUNE 30	\$10,442,617	\$7,941,087	\$26,066,602	\$31,366,492	\$75,816,798	\$53,221,521

Source: City of Riverside, 1986b.

flows due to increased demand placed on the sewage lines, various construction projects, grease and debris in the lines, and lack of sufficient personnel to maintain lines at programmed levels. Expansion of the wastewater plant is currently underway and this construction will continue through 1990.

Solid waste utility expenditures by the City of Riverside were estimated to be \$8.4 million in FY 1986 and \$7.7 million in FY 1985. City crews serve single family residents in the older portions of Riverside. Private contractors collect in the La Sierra and University areas and from commercial establishments. City planners expect new developments to be handled by contract, as well.

3.3.2.3 Val Verde Elementary School District

The Val Verde Elementary School District is one of five elementary districts in the Perris Union High School District. Table 3.3-3 indicates resources by source and expenditures by activity for operations for FY 1987. Operations are largely funded from two sources: the state apportionment, which is drawn from the general fund, and the share of local property tax revenues collected for school purposes. The size of the share which is funded by local property tax revenues depends upon the size of the property tax base, since Proposition 13 put a limit on increases in the levy rate. Statewide, on the average, the state apportionment finances about 70 percent of operations. Effectively, the state apportionment redistributes taxes collected from districts with relatively larger property tax bases to those with smaller property tax bases.

Due to rapid growth in recent years, existing school facilities within the district have been supplemented by the use of temporary classrooms at many of the facilities. School year 1986-87 enrollments in the elementary district totaled approximately 1,540. As shown in Table 3.3-3, total expenditures from the general fund in the school year 1986-87 were \$4,313,988 -- an average of \$2,801 per pupil. There were 29 classrooms in permanent facilities, and an additional 19 temporary classrooms in use district-wide. The elementary district enrollment has been projected by the district to more than double over the next five years, to 3,705 pupils by school year 1991-92. This indicates a need for an additional 86 classrooms by that time.

Three construction projects are currently planned by the district to add a total of 44 classrooms for the 1987-88 and 1988-89 school years. An application for construction funds from the California Department of Education for the classrooms is currently pending approval. Even if these funds are approved, the district would still have a shortfall of 42 classrooms by the 1991-92 school year.

There are three potential funding sources for the construction or purchase of additional school space. The standard method is to apply for state aid, using growth projections and current and expected capacity shortfalls to substantiate the need for the capital improvements requested. However, the processing of such applications by the state is usually lengthy and funds are presently insufficient to fund all requests.

The second source of capital financing is from fees imposed by school districts on new commercial and residential development. These fees are \$1.50 per square foot

Table 3.3-3
COMBINED STATEMENT OF INCOME, EXPENDITURES AND CHANGES IN FUND BALANCES - VAL VERDE ELEMENTARY SCHOOL DISTRICT
FOR THE YEAR ENDED JUNE 30, 1987

	GENERAL	SPECIAL REVENUE	DEBT SERVICE	CAPITAL PROJECTS	STUDENT BODY TRUSTS	TOTAL
INCOME:						
Federal	\$ 224,359	198,436				422,795
State	4,224,941	32,148		203,174		4,460,263
County	90					90
Local	911,552	599,409	167,467	2,289	35,457	1,716,174
Total Income	5,360,940	829,993	167,467	205,463	35,457	6,599,322
EXPENDITURES:						
Salaries and employee						
benefits	3,595,370	121,195				3,716,565
Books and supplies	296,756	107,849				404,605
Services and operating						
expenses	264,892	350,253			36,582	651,727
Capital outlay	113,984	159,112		124,983		398,079
Debt service	22,656		116,040			138,696
Tuition and other						
transfers	20,330					20,330
Total Expenditures	4,313,988	738,409	116,040	124,983	36,582	5,330,002
EXCESS OF INCOME OVER (UNDER) EXPENDITURES	1,046,954	91,584	51,427	80,480	(1,125)	1,269,320
TRANSFERS						
Transfers - incoming		21,184				21,184
Transfers - (outgoing)	(21,184)					(21,184)
INCREASE (DECREASE)						
IN FUND BALANCE						
	1,025,770	112,768	51,427	80,480	(1,125)	1,269,320
FUND BALANCES - JULY 1, 1986	(572,657)	308,298	31,846	47,137	6,458	(178,918)
FUND BALANCES - JUNE 30, 1987	\$ 453,113	421,066	83,273	127,617	5,333	1,090,402

Source: California State Controller's Office, unpublished data.

of new residential building space and \$0.25 per square foot of new commercial and industrial building space. These developer fees are currently charged in concert by the Val Verde Elementary and Perris Union High school districts.

The third source of capital funding is from issuing bonds. These bond issues, which require approval by two-thirds of voters, may be encumbered by the property owners of the entire school district or by the property owners in the portions of the school district which would be serviced by the new facilities. In practice, due to the difficulty in obtaining funds to support school facility construction, school districts in high growth areas have attempted to alleviate overcrowding by implementing policies such as double sessions and a year-round school term, and by use of trailers as temporary classrooms.

3.3.2.4 Perris Union High School District

The Perris Union High School District school year 1986-87 enrollments totalled approximately 3,100 pupils in two middle schools and one high school. Table 3.3-4 provides financial information, including total expenditures from the general fund, which amounted to \$12,903,718 -- an average of \$4,162 per pupil. There were approximately 98 classrooms in existing permanent facilities, and an additional 29 temporary classrooms. A new middle school opened in early 1987 and 17 high school classrooms are planned for completion by the 1988-89 school year. Enrollments in the high school district are also projected to more than double over the next five years, to 6,040 pupils by school year 1991-92. This growth will require an additional 86 classrooms.

3.3.2.5 Western Municipal Water District

Western Municipal Water District has responsibility for water and sewer services in the area where the tract is located. As mentioned previously, under annexation the City of Riverside may provide sewer services. The city system is being expanded in the vicinity of the site in connection with the Orangecrest development, and could possibly be extended further. If the tract is not annexed by the City of Riverside, an alternative method of providing sewer service to any development on the property is still unresolved although Western Municipal Water District personnel are studying the situation currently to explore various options for service to the site.

Water capacity at Western Municipal Water District is fully allocated, however, expansion is currently planned. Western has funded a \$10.5 million project to construct principal elements of the water distribution system slated to serve the project area. Water capacity should be available within 24 months.

Table 3.3-4
COMBINED STATEMENT OF INCOME, EXPENDITURES AND CHANGES IN FUND BALANCES - PERRIS UNION HIGH SCHOOL DISTRICT
FOR THE YEAR ENDED JUNE 30, 1987

	GENERAL	SPECIAL REVENUE	DEBT SERVICE	CAPITAL PROJECTS	STUDENT BODY TRUSTS	TOTAL
INCOME:						
Federal	\$ 491,390	99,344				590,734
State	7,486,486	158,514	2,146	3,722,451		11,369,597
County	5,718					5,718
Local	4,654,275	1,809,245	32,690	39,877	172,097	6,708,184
Total Income	12,637,869	2,067,103	34,836	3,762,328	172,097	18,674,233
EXPENDITURES:						
Salaries and employee benefits	10,252,119	404,409				10,656,528
Books and supplies	943,215	256,916				1,200,131
Services and operating expenses	1,219,286	265,620		8,089	165,804	1,658,799
Capital outlay	387,988	724,233		3,719,081		4,831,302
Debt service	66,276	21,807			88,083	
Tuition and other transfers	34,834					34,834
Total Expenditures	12,903,718	1,651,178	21,807	3,727,170	165,804	18,469,677
EXCESS OF INCOME OVER (UNDER) EXPENDITURES	(265,849)	415,925	13,029	35,158	6,293	204,556
TRANSFERS						
Transfers - incoming		118,965				118,965
Transfers - (outgoing)	(118,965)					(118,965)
INCREASE (DECREASE) IN FUND BALANCE	(384,814)	534,890	13,029	35,158	6,293	204,556
FUND BALANCES - JULY 1, 1986	888,671	778,617	8,680	84,641	14,835	1,775,444
FUND BALANCES - JUNE 30, 1987	\$ 503,857	1,313,507	21,709	119,799	21,128	1,980,000

Source: California State Controller's Office, unpublished data.

3.4 PUBLIC HEALTH AND SAFETY

3.4.1 Main Base

According to the March AFB Installation Restoration Program (IRP) report (U.S. Air Force, 1986a), no hazardous materials exist on any of the three sites selected for the proposed replacement facilities. The IRP was developed by the Department of Defense to identify and evaluate where contamination may be present due to past hazardous waste disposal practices, to control migration of hazardous contaminants, and to control hazards to health or the environment that may result from these past disposal activities. Although the program has discovered hazardous materials in groundwater wells on the Main Base, groundwater migration is away from the selected sites. Additionally, groundwater would not be used as a water source of the facilities.

3.4.2 West March

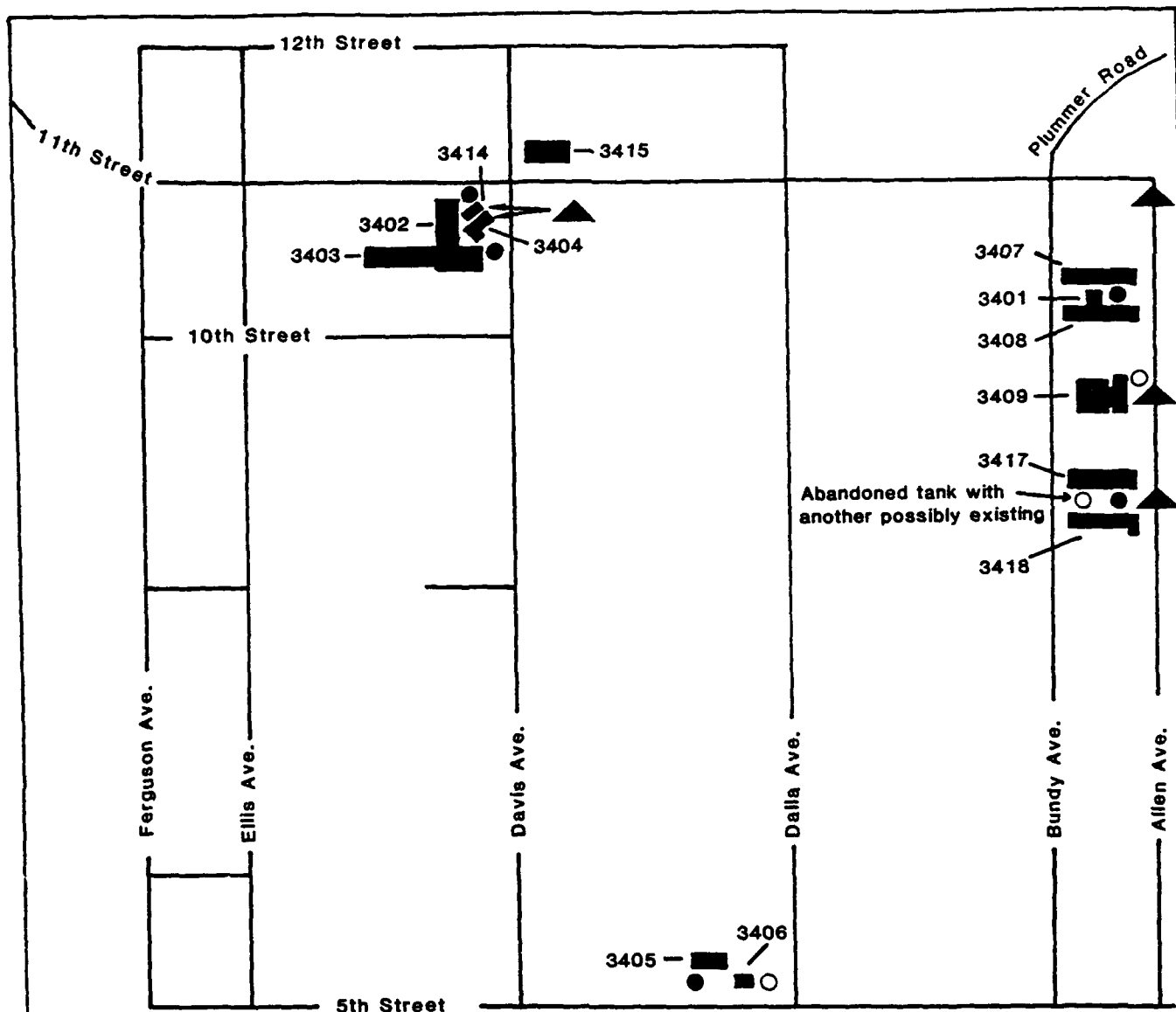
Potentially hazardous materials exist on the 845-acre land conveyance property in the form of polychlorinated biphenyls (PCBs) contained in transformers, diesel fuel in underground storage tanks (USTs), and asbestos-containing material (ACM) in buildings. These materials may pose a hazard to public health or the environment as a result of contamination of surrounding soils, groundwater, or air.

3.4.2.1 Polychlorinated Biphenyls (PCBs)

PCBs, oil-like substances used in transformers as heat sinks and capacitors, have been found to display various degrees of toxicity to wild birds, fish, and rodents and laboratory primates. Although the danger caused by PCBs to humans is unclear, PCBs have been implicated as causing cancer in laboratory animals in experiments conducted by the U.S. Public Health Service (Laws, 1981). PCBs held in transformers have the potential to contaminate both the host transformers (which may lead to rotting and crumbling of casings) and the environment (by leakage through casing cracks or fallout from transformer explosion).

The sources of PCBs on the property are five clusters of 14 in-service transformers located at the sites indicated in Figure 3.4-1. Table 3.4-1 lists the transformers by location and provides information on transformer size and concentration of PCBs.

In accordance with EPA requirements, the Air Force conducted an inspection of transformers that determined they were not leaking, and labels were attached to the transformers indicating that they contain PCBs (Lt. John Laviolette, personal communication, March AFB, 1987). Since the active transformers were inspected and found not to be leaking, labeling is all that is required. (*If a transformer were found to be leaking, decontamination and removal of surface soils would be required.*)



Source: March Air Force Base, 1987.
Lee Wan & Associates, 1987 & 1988.

SCALE
400 200 0 400 800 FEET

- ▲ Site of transformers containing PCBs
- Underground diesel fuel storage tank
- Underground diesel fuel storage tank with evidence of leakage
- All buildings, except 3401, contain asbestos



Figure 3.4-1
LOCATION OF SITES CONTAINING HAZARDOUS MATERIALS

Table 3.4-1
SIZE AND LOCATION OF TRANSFORMERS

<u>Number of Transformers</u>	<u>Location</u>	<u>Size (KVA)</u>	<u>PCBs (ppm)</u>
3	Bldg 3404	500 KVA	610,000
		500 KVA	620,000
		500 KVA	590,000
3	Utility Pole 135	50 KVA	> 500
		50 KVA	> 500
		50 KVA	> 500
3	Utility Pole 133	75 KVA	<50
		75 KVA	<50
		75 KVA	<50
1	Utility Pole 138	25 KVA	<50
4	Mounted on Pad at Bldg 3414	NA	50< <500
		NA	50< <500
		NA	50< <500
		NA	50< <500

Source: March AFB, 1987.

3.4.2.2 Underground Storage Tanks

Leakage of diesel fuel from underground storage tanks can lead to contamination of soil and, if severe leakage occurs, groundwater.

The contents, size, location, and condition of nine underground storage tanks have been identified through an intensive survey under the direction of the Hazardous Waste Remedial Action Program (HAZWRAP) at Oak Ridge National Laboratory (ORNL) (Lee Wan & Associates, 1988) (see Figure 3.4-1 and Table 3.4-2). These nine tanks were investigated through March AFB record searches, interviews with site personnel, visual site inspections, field surveys using a metal detector, and field sampling of stored diesel fuel and soil surrounding the USTs. Eight of the tanks currently are used as standby power fuel sources and contain diesel fuel, and one has been abandoned and filled with inert material (cement). There is a possibility that more tanks may exist on the site.

The diesel fuel contained in the USTs was sampled and analyzed against a controlled sample of diesel fuel collected from a tank truck. This comparison revealed that the contents of two of the eight USTs containing fuel differ analytically and visibly from the controlled sample. Oil sampled from the UST near Building 3409 contains volatile hydrocarbons not found in any other samples. The flash point for this sample is much lower (25°C) than the normal flash point range for diesel fuel (43°C-88°C). Fuel in the UST near Building 3415 has a flash point of 48°C and is composed of either oil or another volatile organic liquid.

Analyses of base/neutral/acid (BNA) extractable organic spectra data from soil samples taken near the USTs indicate severe leakage of oil at the UST at Building 3406 (up to 6,000 parts per million (ppm) of oil) and lesser degrees of leakage from the abandoned UST at Building 3417/3418 (100 ppm) and the UST at Building 3409 (160 ppm). These leakages have led to hydrocarbon contamination of the soil around each of the three tanks. The full extent of soil contamination caused by these leakages could not be assessed based on this preliminary survey. The analyses detected no leakage from any of the remaining six tanks identified in the survey. Analysis of the total organic halide data revealed no presence of highly toxic halogenated organic compounds in any of the samples.

3.4.2.3 Asbestos

Since various diseases (including asbestosis, mesothelioma, and cancers of the lung, esophagus, stomach, and colon) have been linked with industrial exposure to airborne asbestos, the extensive use of asbestos products and their potential for contamination in nonindustrial settings have raised environmental concern. Presence of asbestos does not pose an immediate threat to the health of building occupants. If ACM remains in good condition and is not disturbed, exposure is not likely. However, when maintenance, repair, renovation, or removal disturb or damage ACM, asbestos fibers that are released create a health hazard to building occupants (U.S. Environmental Protection Agency, 1985).

Table 3.4-2
INVENTORY OF KNOWN UNDERGROUND STORAGE TANKS
ON LAND CONVEYANCE PROPERTY

<u>Building</u>	<u>Status</u>	<u>Volume (gals.)</u>	<u>Oil Flash Point (°C)</u>	<u>Oil Components in Soil (ppm) [1]</u>
3401	Active	6650	68	none
3404	Active	-	48	none
3405	Active	1000	58	none
3406	Active	1000	64	6000 [2]
3409	Active	8000	25	160 [2]
3414	Active	2000	76	none
3415	Active	500	48	none
3417/ 3418	Active	6650	56	none
3417/ 3418	Abandoned	3500	-	100 [2]

[1] Based on Base/Neutral/Acid (BNA) Extractable Organic Compound analyses

[2] Indicates background soil contamination

Source: Lee Wan & Associates, 1988.

A recently completed survey by Lee Wan & Associates (1987) under the direction of HAZWRAP at ORNL has shown that ACM exists in either floor tiles, wainscot materials, or insulation in nine of the ten buildings on the land conveyance parcel (see Figure 3.4-1 and Table 3.4-3). Only Building 3401 was free of asbestos. Surveyed floor tiles, acoustical wall panels, and wainscot materials that contain asbestos (in Buildings 3403, 3405, 3407, 3408, 3409, and 3415) are in good condition and are not friable; they present no imminent hazard to public health. On the other hand, pipe, duct, and room insulation in all buildings but 3401 and 3417 were often found in varying degrees of friability and in poor condition -- posing a potential health hazard to exposed workers. In addition, some loose ACM was found on the floor of Building 3405 due to poor housekeeping.

Table 3.4-3.
LOCATION AND CONDITION OF ASBESTOS ON LAND CONVEYANCE PARCEL

<u>Building</u>	<u>Asbestos Containing Material</u>	<u>Condition</u>	<u>Recommendation [1]</u>
3401	no asbestos found		
3403	floor tiles acoustical wall panels pipe insulation	good, nonfriable good, nonfriable varying degrees of friability	periodical checking to document condition periodical checking to document condition removal of loose insulation, encapsulation of remaining insulation
3404	pipe and duct insulation	poor, friable	encapsulation of friable insulation
3405	floor tiles pipe, tank, and duct insulation	good, nonfriable poor, friable	periodical checking to document condition encapsulation of friable insulation
3407	pipe insulation floor tiles	small friable area good, nonfriable	encapsulation of friable area periodical checking to document condition
3408	insulation floor tiles pipe insulation	good, nonfriable good, nonfriable poor, friable	periodical checking to document condition periodical checking to document condition immediate encapsulation of insulation
3409	floor tiles pipe insulation	good, nonfriable poor, friable	periodical checking to document condition removal of insulation in severe condition, encapsulation of remaining insulation
3415	floor tiles wainscot materials	good, nonfriable good, nonfriable	periodical checking to document condition periodical checking to document condition
3417	laundry room insulation	exposed, friable	removal of asbestos insulation
3418	laundry/utility room insulation pipe insulation	good, nonfriable exposed, friable	periodical checking to document condition removal of deteriorated insulation, encapsulation of remaining insulation

[1] If future plans include demolition of building, nonfriable materials should be wetted and removed in sections (not scraped, sanded, or cut) to minimize generation of airborne asbestos fibers; deteriorated insulation should be removed using glove-bag techniques; and loose material should be removed with a HEPA-filtered vacuum.

Source: Lee Wan & Associates, 1987.

3.5 TRAFFIC

March AFB lies approximately 65 miles east of Los Angeles, immediately southeast of the city of Riverside. Regional access to the base is provided by Interstate Highway 215 (I-215), a major north-south artery which runs through the installation, dividing it into the Main Base on the east and West March on the west. As discussed in the following paragraphs, localized traffic access varies between these two portions of the base.

3.5.1 Main Base

Three primary arterial roads provide access to the Main Base at March: Cactus Avenue, Graham Street, and John F. Kennedy Drive (Figure 3.5-1). Cactus Avenue, which runs along part of the northern periphery of the Main Base, provides access from the west, including the Arnold Heights military residential complex on West March. John F. Kennedy Drive, which intersects the eastern boundary of the Main Base, connects the base with residential developments to the east. Finally, Graham Street provides access to the Main Base from the north, intersecting Cactus Avenue on the northern edge of the base. A proposed, future realignment of I-215 to the west (north of Arnold Heights) is likely to modify these patterns of access slightly -- notably by improving the connections between Cactus Avenue and the interstate (U.S. Air Force, 1988b). Within Main Base boundaries, Graham Street continues as Riverside Drive, while John F. Kennedy Drive becomes Meyer Drive. In conjunction with Graeber Street, an industrial artery which runs adjacent and parallel to the flight line, Riverside Drive and Meyer Drive make up the major roadways within the bounds of the Main Base.

Three gates provide access to the Main Base (Table 3.5-1). The Main Gate, located near the intersection of Riverside Drive and Cactus Avenue, accommodates 62 percent of the average total daily gate traffic. The West Gate, situated at the northwestern boundary of the Main Base approximately 500 feet south of the intersection of Cactus Avenue and Graeber Street, provides access to another 20 percent of daily traffic. Finally, the remaining 18 percent of daily traffic enters and exits the Main Base through the East Gate, located at the intersection of Meyer Drive and Heacock Street. The Main Gate is staffed 24 hours per day, while the others, with few exceptions, are closed by 1800 hours and on weekends (see Table 3.5-1).

A recent traffic engineering study of March Air Force Base, conducted in May 1986, discovered few shortcomings with the transportation system on the installation itself (U.S. Air Force, 1987a). The most critical problems noted in the study were: traffic queues at the West Gate during the morning peak hour; unsafe conditions at the intersections of Riverside Drive with both A Avenue and Meyer Drive; and unsafe conditions at the intersection of Meyer Drive with Graeber Street. Only the first of the aforementioned problems has potential repercussions which extend beyond the bounds of the Main Base to the surrounding transportation network -- depending upon the degree of traffic backup. The 1986 study made the following recommendations.

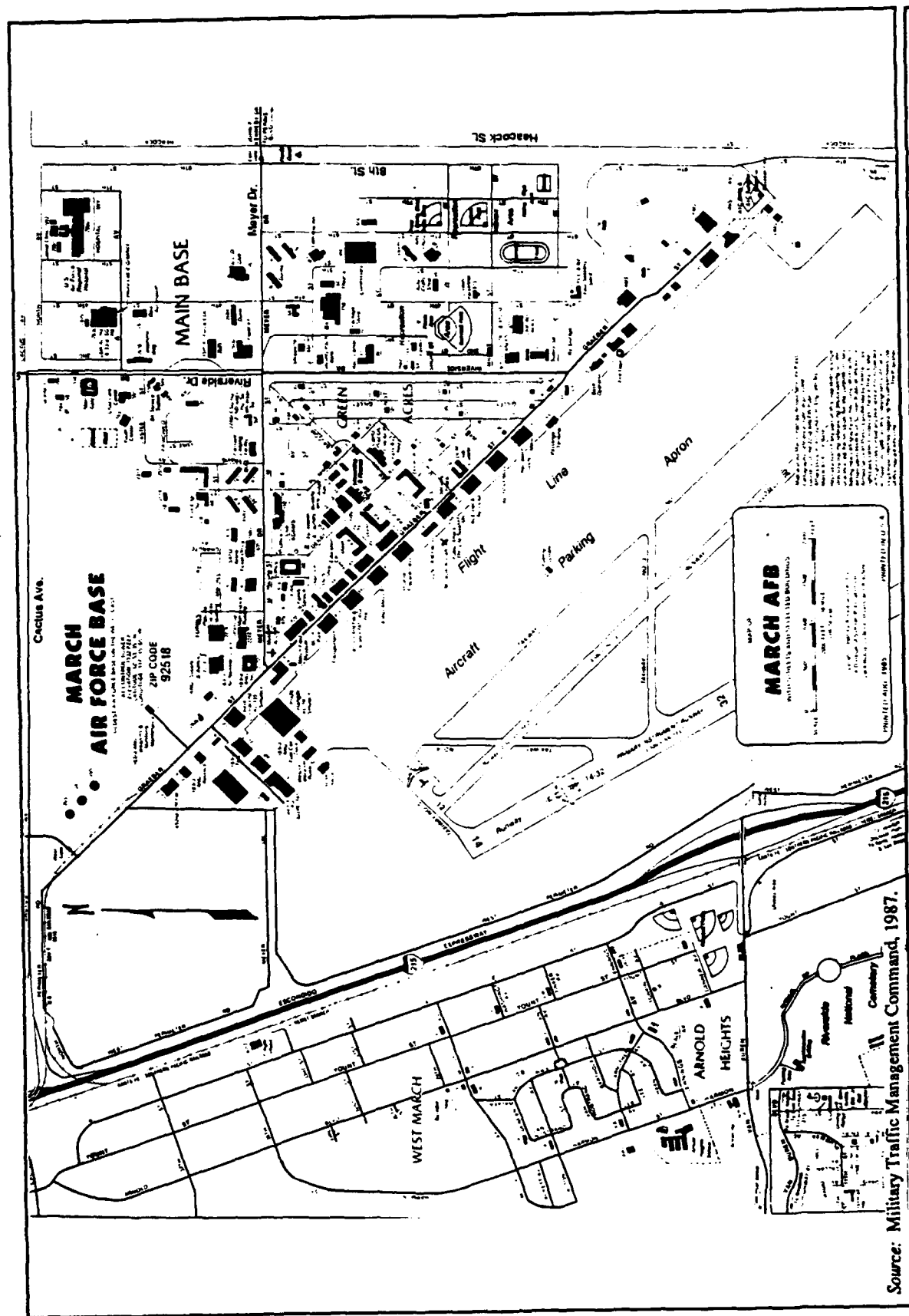


Figure 3.5-1
TRANSPORTATION NETWORK AT MARCH AFB

Source: Military Traffic Management Command, 1987.

Table 3.5-1
GATE TRAFFIC VOLUMES AT MARCH AIR FORCE BASE

Gate Traffic Characteristics	Gate			Total
	Main	East	West	
Hours of Operation		M, W, F, (0600-1800) Tu-Th (0600-2000) Closed Wkends	M-Sat. (0600-1800) Closed Sun.	
	24 hr. Daily			
Number of Lanes				
Inbound	3	1	2*	5
Outbound	2	1	1	4
Morning Peak Hour Volumes (0645-0745)				
Inbound	1000	405	820	2225
Percent of Total				
Peak Inbound	45%	18%	37%	100%
Outbound	200	801	120	400
Evening Peak Hour Volumes (1600-1700)				
Inbound	385	140	175	700
Outbound	1130	460	690	2280
Percent of Total				
Peak Outbound	50%	20%	30%	100%
24-Hour Gate Volumes				
Inbound	6990	2190	2530	11710
Outbound	8680	2200	2400	13280
Total	13670	4390	4390	24990
Percent of Total	62%	18%	20%	100%

* One lane ends just inside the gate, and is of limited use to traffic.

Source: U.S. Air Force, 1987a.

- o Two continuous inbound lanes onto the Main Base should be provided at the West Gate, to reduce the backup on Cactus Avenue during the morning peak hour.
- o Two guards should be assigned at the West Gate, and a visitor and truck pulloff area established there, to assist in processing traffic during the morning peak hour.
- o A raised channelization island around the gatehouse and canopy columns at the Main Gate should be constructed, to direct motorists around these objects.
- o Lane markings should be improved at the intersection of Riverside Drive and Cactus Avenue.
- o A right-turn channelization lane, a corner island, and NO LEFT TURN signs should be provided at the intersection of Riverside Drive and A Avenue to improve traffic flow at this junction. In addition, three of the parking spaces along Riverside Drive in front of Building 2620 should be removed, and replaced with a raised corner island.
- o The signal system at the intersection of Riverside and Meyer Drives should be upgraded to include a two-phase, fully actuated system with two signal faces per approach, with the aim of improving traffic flow at this important junction. Safety can be improved further by realigning the northbound lanes of the southern leg of the intersection to line up with the lanes on the northern leg, and installing a traffic barrier along the open drainage ditch on Riverside Drive.
- o Improved signs, coupled with a larger right-turn channelization island, should be provided at the intersection of Meyer Drive and Graeber Street to slow merging vehicles and alert drivers of the upcoming crosswalk. Eventually, Graeber Street might be realigned to provide through-movement for both its northern leg and Meyer Drive.
- o The STOP signs on Meyer Drive at Q Street should be removed.
- o The March Air Force Base Master Plan should be upgraded to include thoroughfare community center plans.
- o The parking lots for Buildings 378 and 470 should be re-marked.

Details of the analysis which led to the above recommendations may be found in the traffic study itself. The researchers who conducted that study felt that the improvements proposed would enhance the overall safety and efficiency of the transportation network on the Main Base, as well as improve the interaction between the onbase network and the local road system.

3.5.2 West March

The present transportation system at West March primarily serves the Arnold Heights residential district. North-south access to developed sections of West March, represented by Arnold Heights and points to its north, is provided by Harmon Street, Arnold Boulevard, and A Street (see Figure 3.5-1 above). Closer to the southwestern boundary of the base, where the land conveyance parcel is located, traffic access is provided mainly by Van Buren Boulevard and Trautwein Road. Van Buren Boulevard is an improved four-lane highway which extends west from I-215 to beyond Highway 91; it runs along the northern boundary of the conveyance tract. Trautwein Road is a north-south, two-lane arterial, terminating at Van Buren Boulevard in the south (just west of the conveyance property) and Alessandro Boulevard in the north. The southern boundary of the 845-acre parcel is delimited by Nandina Avenue. Cajalco Road, currently a narrow canyon road located four blocks south of Nandina Avenue, is slated for future expansion into an expressway as part of the Riverside County Master Plan (County of Riverside, 1988). Once developed, this major route will provide additional regional access to March AFB in general, and the land conveyance property in particular.

Estimated 1987 traffic volumes for transportation links near the land conveyance parcel, and maximum capacities for five of the main roadways in the area (usually comprising a succession of separate links), are provided in Figure 3.5-2. Currently, portions of the network in the vicinity of West March are beginning to show signs of excessive use. According to County of Riverside officials, certain intersections are experiencing delays -- notably the intersections of Trautwein Road with both Van Buren Boulevard and Alessandro Boulevard (County of Riverside, Department of Roads, 1987b). In addition to these junctions, Trautwein Road is in general overloaded, and a number of intersections operating with stop signs and without turn lanes have become bottlenecks. In the Specific Plan for the Orangecrest Project, a 1,500 acre residential development located just north of the 845-acre land conveyance parcel, a traffic analysis noted yet another problem in the West March area -- namely traffic volumes approaching capacity at the intersection of Trautwein Road and Alessandro Boulevard. The following mitigation strategies were recommended to help alleviate traffic-related problems associated with developing Orangecrest (County of Riverside, 1983, pp. 99-103).

- o Implement the following changes at the intersection of Alessandro Boulevard and Trautwein Road:
 - improve the northbound approach on Trautwein Road, providing dual northbound left-turn and single northbound right-turn lanes; and
 - make any improvements necessary to accommodate the above suggested future improvements to Trautwein Road.
- o Make the following changes at the intersection of Van Buren Boulevard and Trautwein Road:
 - widen both approaches on Van Buren Boulevard to Trautwein Road, providing the west leg with dual left-turn and single right-turn lanes, and the east leg with exclusive left-turn and right-turn lanes; and

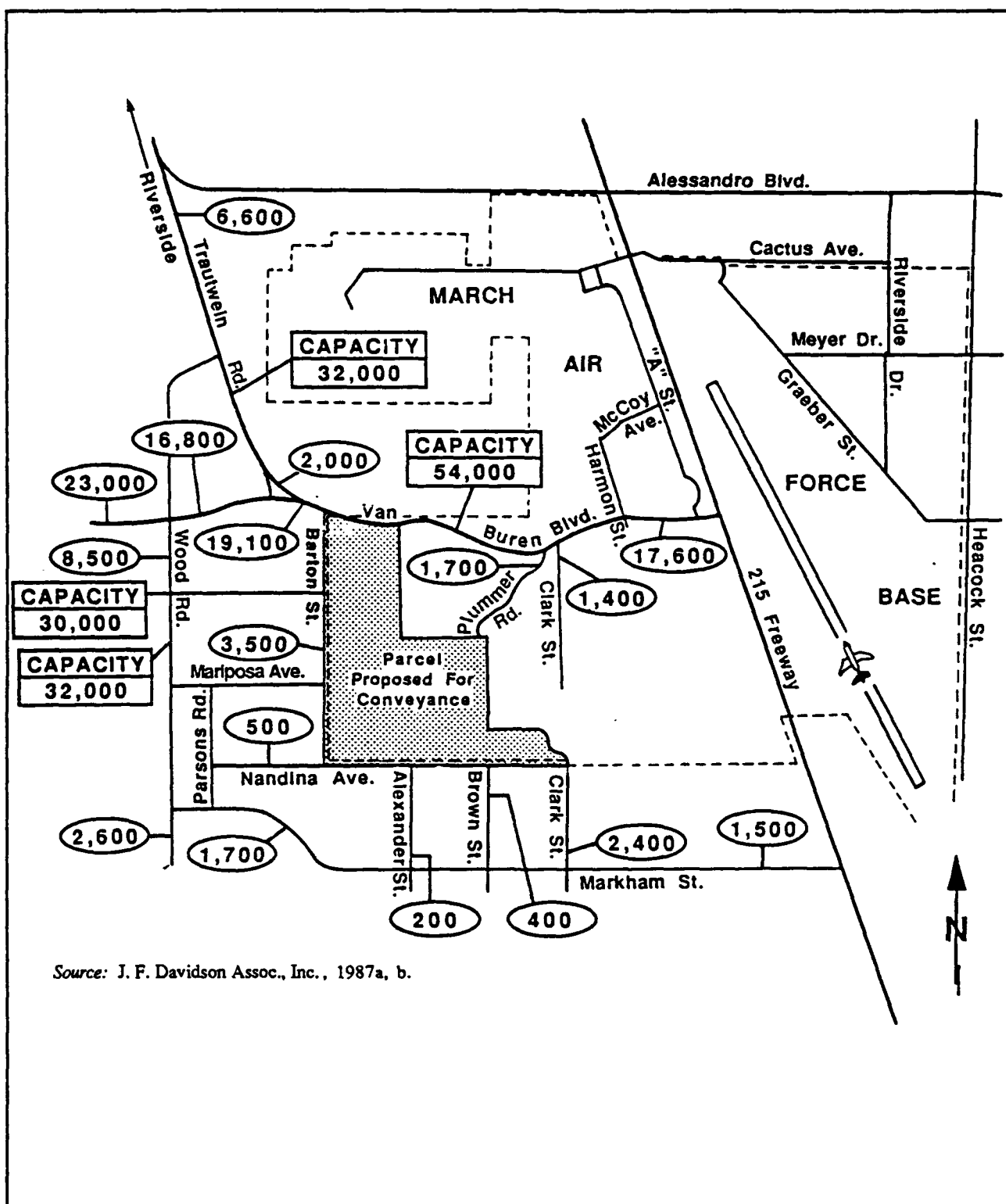


Figure 3.5-2
EXISTING 24 HOUR TRAFFIC VOLUMES IN THE VICINITY OF WEST MARCH

- realign Trautwein Road to intersect Van Buren Boulevard at 90 degrees, installing dual southbound left-turn lanes, and a single southbound right-turn lane.
- o Make the following improvements to Orangecrest streets:
 - widen Trautwein Road within the development;
 - increase the right-of-way for Van Buren Boulevard within the development;
 - construct Orange Terrace Parkway -- a new transportation artery looping north and west from Van Buren Boulevard (east of B Street) to Trautwein Road -- to provide major east-west access through the center of the development; and
 - widen Wood Road adjacent to the development.
- o Improve the following Orangecrest intersections:
 - Trautwein Road and Wood Road;
 - Trautwein Road and Orange Terrace Parkway;
 - Van Buren Boulevard and Barton Street; and
 - Van Buren Boulevard and Orange Terrace Parkway.
- o Install traffic signals at the following intersections:
 - Van Buren Boulevard and Trautwein Road;
 - Van Buren Boulevard and Orange Terrace Parkway; and
 - Trautwein Road and Alessandro Boulevard.

As a result of the above suggestions, several mitigation actions are underway to help attenuate anticipated traffic problems related to Orangecrest. Current plans include widening Trautwein Road to four lanes, constructing the four-lane Orange Terrace Parkway within Orangecrest, and installing signals at the intersections of Orange Terrace Parkway with both Trautwein Road and Van Buren Boulevard. The intersection of Trautwein Road and Alessandro Boulevard is being widened, and a signal installed as a joint project between the Regional Properties and the Orangecrest development. A signal is also being installed at the intersection of Trautwein Road and Van Buren Boulevard as part of the Orangecrest mitigation.

A recent follow-up to previous traffic impact studies of the Orangecrest area discovered that the earlier reports substantially underestimated 1987 traffic for the region (J.F. Davidson Associates, Inc., 1987b) -- suggesting that more severe traffic impacts might be expected. Employing current estimates of traffic volumes based on actual counts, and then projecting these volumes to the year 1995 (Figure 3.5-3),

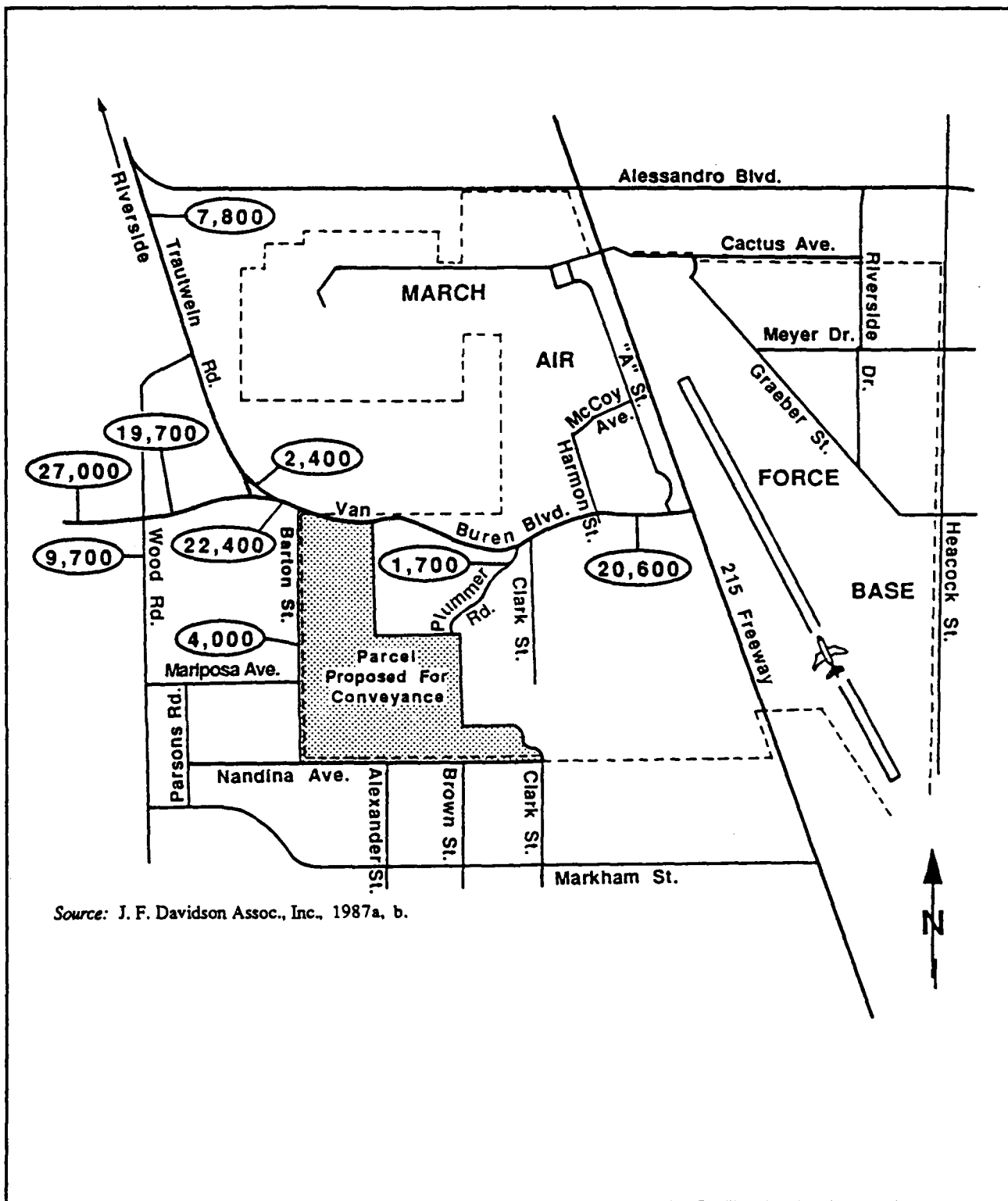


Figure 3.5-3
1995 BASELINE 24 HOUR TRAFFIC IN THE VICINITY OF WEST MARCH

the follow-up study concluded that the maximum capacity of Van Buren Boulevard would be approached -- yielding traffic flow below a level that is acceptable. The primary mitigation measure recommended by the most recent Orangecrest study is that Van Buren Boulevard be expanded by one lane in each direction, increasing it from a four-lane to a six-lane artery (J.F. Davidson Associates, Inc., 1987b, pp 14-16). Recommended intersection-specific mitigation measures most often were results of adding additional lanes to Van Buren Boulevard -- that is, an additional through-movement lane (in each direction) was recommended for Van Buren Boulevard at its intersections with Trautwein Road, Barton Street, B Street, Orange Terrace Parkway, and Wood Road (J.F. Davidson Associates, Inc., 1987b, p. 15). It was also recommended that Trautwein Road be modified at its intersection with Van Buren Boulevard to provide right-turn lanes for turning onto the latter (an improvement noted above in the earlier cited Orangecrest study).

Immediately east of the land conveyance parcel, and just west of the March AFB golf course, lie two other tracts of land earmarked for development (see Figure 3.1-2). One tract is intended as land for Military Family Housing, to be built by a developer from the private sector on approximately 130 acres of land provided by the U.S. Air Force. The other tract is the future site of Air Force Village West, a 153-acre parcel being developed as a retirement village for former U.S. military personnel. Although the former project is still in the planning stages, the Air Force Village West project is further along, with completed environmental studies including an assessment of its impact on local traffic (J.F. Davidson Associates, Inc., 1987a).

Access to Air Force Village West will be at locations adjacent to and near the eastern parts of the land conveyance property, along Plummer Road and Clark Street from the north, and Brown Street and Clark Street from the south. These streets are all two-lane collectors, with Plummer Road currently serving as the main access to the 15th Air Force Headquarters. The traffic study for Air Force Village West indicates that existing traffic volumes on associated access roads are light (J.F. Davidson Associates, Inc., 1987a, p. 7). The traffic volume on Plummer Road is approximately 1,680 vehicles per day at the northern end of the project area, and the volume on Clark Street is approximately 2,400 vehicles per day at the south end. In contrast, the traffic volume on Van Buren Boulevard between Trautwein Road and Wood Road reaches nearly 17,000 vehicles per day (see Figure 3.5-2). The previously completed traffic study for Air Force Village West suggested that anticipated problems associated with the project could be mitigated -- in particular through the following strategies:

- o Brown and Clark Streets should be widened and extended, meeting Riverside County Standard No. 106, to provide adequate southern and southwestern access to the development; and
- o signals and right and left turn lanes for northbound vehicles should be provided for both Clark Street and Plummer Road at their intersections with Van Buren Boulevard.

3.6 AIR QUALITY

3.6.1 South Coast Region

March AFB is located within the South Coast Air Basin, which is bordered on the north by the San Gabriel Mountains, on the south by the Santa Ana Mountains, on the east by the San Jacinto Mountains, and on the west by the Pacific Ocean. The climate of the basin is mild and characterized by cool sea breezes. Occasionally, the mild climate is interrupted by periods of extremely hot weather, winter storms, or Santa Ana winds, which transport hot air into the basin from inland deserts.

Air quality within the basin is affected greatly by climatic variations. The characteristics of some weather patterns within the basin serve to disperse air pollutants better than others. The meteorological factors that are most important in the dispersion of air pollutants are wind speed and direction, and atmospheric temperature inversions. During the spring and early summer, pollutants are usually blown out of the basin into the inland desert areas. In the late summer and winter months, wind speeds are typically very light which allows a build-up of air pollutants to occur in the basin. This build-up of air pollutants is further concentrated if a temperature inversion blocks the vertical dispersion of air pollutants. Usually, the temperature of air decreases with altitude, however an inversion occurs when the temperature of an air mass increases with altitude. When an inversion occurs, the vertical movement of air stops and pollutants are "trapped" below an altitude that is often less than 1,000 feet.

3.6.2 Local Area

The South Coast Air Quality Management District (SCAQMD) monitors air quality at two locations in the City of Riverside, and one in the City of Perris. The sites of new construction and land conveyance are located approximately eight miles south of the City of Riverside and approximately eight miles north of the City of Perris, so the air quality at the sites can be assumed to be similar to the air quality at the three monitoring stations. The results of the 1985 and 1986 air quality monitoring by the district are shown in Table 3.6-1. The table indicates that federal air quality standards for ozone and particulate matter and state standards for carbon monoxide, ozone, and particulate matter were exceeded at the monitoring stations during both 1985 and 1986. Additionally, monitoring at March AFB indicated that the state visibility standard of 10 miles, on days when the relative humidity is less than 70 percent, was not met during 168 days in 1985 or during 198 days in 1986.

Table 3.6-1
AIR QUALITY DATA
CITIES OF RIVERSIDE AND PERRIS
1985 AND 1986

	<u>City of Riverside #1</u>		<u>City of Riverside #2</u>		<u>City of Perris</u>	
	1985	1986	1985	1986	1985	1986
<u>Carbon Monoxide</u>						
Maximum Concentration (ppm ¹ , 1-hour)	8	9	14	18	NM ⁶	NM
Number of Days Standard Exceeded						
Federal (>9.3 ppm, 8-hours)	0	0	0	0	NM	NM
(>35 ppm, 1-hour)	0	0	0	0	NM	NM
State (>9.1 ppm, 8-hours)	0	0	1	0	NM	NM
(>20 ppm, 1-hour)	0	0	0	0	NM	NM
<u>Ozone</u>						
Maximum Concentration (ppm, 1-hour)	0.35	0.25	NM	NM	0.29	0.22
Number of Days Standard Exceeded						
Federal (>.12 ppm, 1-hour)	125	106	NM	NM	96	79
State (>.10 ppm, 1-hour)	173	161	NM	NM	146	133
<u>Nitrogen Dioxide</u>						
Maximum Concentration (ppm, 1-hour)	0.16	0.16	NM	NM	NM	NM
Number of Days Standard Exceeded						
State (>.25 ppm, 1-hour)	0	0	NM	NM	NM	NM
Percent AAM ² Exceeded						
Federal (>.0532 ppm)	0	0	NM	NM	NM	NM
<u>Sulfur Dioxide</u>						
Maximum Concentration (ppm, 1-hour)	0.02	0.02	NM	NM	NM	NM
Number of Days Standard Exceeded						
Federal (>.14 ppm, 24-hours)	0	0	NM	NM	NM	NM
(>.5 ppm, 3-hours)	0	0	NM	NM	NM	NM
State (>.05 ppm, 24-hours)	0	0	NM	NM	NM	NM
(>.25 ppm, 1-hour)	0	0	NM	NM	NM	NM
Percent AAM Exceeded						
Federal (>.03 ppm)	0	0	NM	NM	NM	NM

Table 3.6-1

Page 2 of 2

	City of Riverside #1		City of Riverside #2		City of Perris	
	1985	1986	1985	1986	1985	1986
<u>Total Suspended Particulates</u>						
Maximum Concentration ($\mu\text{g}/\text{m}^3$, 24-hours) ³	335	347	229	326	201	215
Number of Samples Standard Exceeded						
Federal ($>260 \mu\text{g}/\text{m}^3$, 24-hours)	4	1	0	1	0	0
State ($>150 \mu\text{g}/\text{m}^3$, 24-hours)	29	24	15	8	7	8
Percent AGM ⁴ Standard Exceeded						
Federal ($>75 \mu\text{g}/\text{m}^3$ AGM)	76.4%	60.5%	43.3%	28.7%	17.1%	18.8%
State ($>60 \mu\text{g}/\text{m}^3$, AGM)	120.0%	100.7%	79.2%	60.8%	46.3%	48.5%
<u>Lead</u>						
Maximum Concentration ($\mu\text{g}/\text{m}^3$, 24-hours)	0.58	0.34	0.73	0.51	0.30	0.16
Number of Occasions Standard Exceeded						
Federal ($>1.5 \mu\text{g}/\text{m}^3$, Qtrly Avg.)	0	0	0	0	0	0
State ($\geq 1.5 \mu\text{g}/\text{m}^3$, Mo. Avg.)	0	0	0	0	0	0
<u>Sulfate</u>						
Maximum Concentration ($\mu\text{g}/\text{m}^3$, 24-hours)	21.0	18.4	21.1	18.5	14.1	14.0
Number of Samples Standard Exceeded						
State ($\geq 25 \mu\text{g}/\text{m}^3$, 24-hours)	0	0	0	0	0	0
<u>Suspended Particulates PM₁₀⁵</u>						
Maximum Concentration ($\mu\text{g}/\text{m}^3$, 24-hours)	208	294	NM	NM	NM	NM
Number of Samples Standard Exceeded						
State ($\geq 50 \mu\text{g}/\text{m}^3$, 24-hours)	47	48	NM	NM	NM	NM
Percent AGM Standard Exceeded						
State ($>30 \mu\text{g}/\text{m}^3$, AGM)	169	147	NM	NM	NM	NM

1 ppm - parts per million

2 AAM - annual arithmetic mean

3 $\mu\text{g}/\text{m}^3$ - micrograms per cubic meter of air

4 AGM - annual geometric mean

5 PM₁₀ - fine particulates with an aerodynamic diameter of 10 micrometers or less

6 NM - not monitored

Source: South Coast Air Quality Management District, 1987.

3.7 NOISE

In the context of this study, noise is taken to mean unwanted sound created during construction or operation of any of the components of the proposed action. Such noise may be intermittent or continuous, and may vary considerably depending on the type and number of noise sources, the sensitivity of the receptor, the time of day, and distance from the source. Also considered in the study is the compatibility of proposed land uses with the existing noise environment.

Noise energy levels are measured in "A"-weighted decibels (dBA) which simulate the normal human hearing response. Noise contours are the mapped expression of average noise levels surrounding a source of noise, such as a highway or airport. The noise exposure contours in the vicinity of the March AFB airfield and I-215 are depicted in Figure 3.7-1. In this case, the noise contours represent the Community Noise Equivalent Level (CNEL), a state of California index based on a 24-hour average of noise levels with evening and nighttime sound levels penalized by an additional 5 dB for noise between 7 and 10 pm and 10 dB between 10 pm and 7 am to account for increased sensitivity to noise when background levels have normally dropped (e.g., sleeping hours). Guidelines for establishing the compatibility of noise levels with land uses are provided in Table 3.7-1.

3.7.1 Main Base

The selected sites of the 15th Air Force Headquarters, the NCO Professional Education Center, and the 15th Air Force Band Center all fall outside the 65 dB noise contour generated by noise from the March AFB airfield and I-215. According to the California Office of Noise Control (CONC), the County of Riverside (1986a), and the March AFB Air Installation Compatible Use Zone (AICUZ) (U.S. Air Force, 1984b), business and professional office uses are considered generally unacceptable uses in areas with average noise exposure levels greater than 70 dB.

3.7.2 West March

All areas of the 845-acre parcel proposed for conveyance also lie outside the 65 dB noise contour generated by March AFB airfield and I-215. Guidelines for land use compatibility consider residential development generally unacceptable in areas with average noise levels greater than 65 dB.

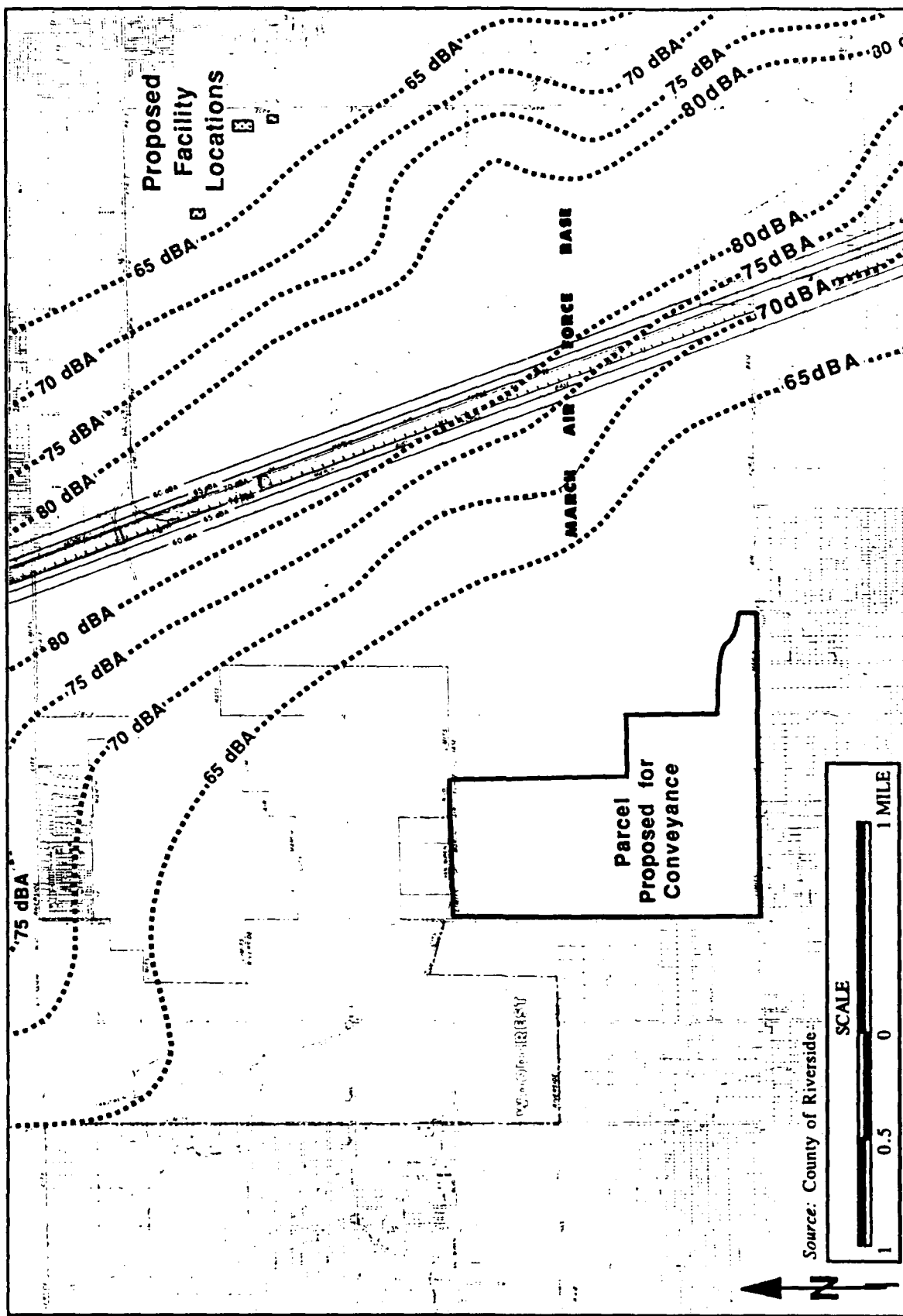


Figure 3.7-1
NOISE CONTOURS IN THE VICINITY OF PROJECT SITES

Table 3.7-1
LAND USE COMPATIBILITY CHART FOR COMMUNITY NOISE

	Land Uses	CNEL or Ldn Value (dBA)							
		50	55	60	65	70	75	80	85
Noise Sensitive Receptor	Residential Land Uses: Single and Multiple Family Dwellings, Group Quarters, Mobilehomes	A		B		C		D	
	Transient Lodging: Hotels, Motels	A		B		C		D	
	School Classrooms, Libraries, Churches, Hospitals, Nursing Homes, etc.	A		B		C		D	
	Recreational Land Uses: Golf Courses, Open Space Areas with walking, bicycling or horseback riding trails, water based recreation areas where motorized boats and jet-skis are prohibited.	A		B		C		D	
	Office Buildings, Personal, Business and Professional Services	A		B		C		D	
	Auditoriums, Concert Halls, Amphitheaters, Music Shell (maybe noise sensitive or noise producer)	A				B			
Noise Producer	Sports Arenas, Outdoor Spectator Sports	A				B			
	Recreational Land Uses: Playgrounds, Neighborhood Ball Parks, Motorcycle Parks, and Water-based Recreation Areas where motorized boats and jet-skis are permitted.	A		B		C		D	
	Commercial Land Uses: Retail Trade, Movie Theaters, Restaurants, bars, entertainment related commercial activities, services.	A				B		C	
	Commercial Land Uses: Wholesale, Industrial/ Manufacturing, Transportation, Communications and Utilities.	A						C	
								D	

Explanation of Land Use Consequences:

- | | |
|---|---|
| <p>A <u>Normally Acceptable.</u> With no special noise reduction requirements assuming standard construction.</p> <p>B <u>Conditionally Acceptable.</u> New construction or development should be undertaken only after a detailed analysis of the noise reduction requirement is made and needed noise insulation features included in the design.</p> | <p>C <u>Generally Unacceptable.</u> New construction is discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.</p> <p>D <u>Land Use Discouraged.</u> New construction or development should generally not be undertaken.</p> |
|---|---|

Source: County of Riverside, 1986a.

3.8 GEOLOGY AND TOPOGRAPHY

The regional geology of the March AFB area is characterized by igneous and metamorphic crystalline rocks overlain by or protruding through alluvial sediments of the Perris Valley. Bedrock surface outcrops include the Perris Block, Gavilan Hills, Lakeview Mountains, and Box Springs Mountains. These mountains and escarpments date from the Mesozoic era. The Perris Valley, located in the physiographic province of the Peninsular Ranges, is flat to gently sloping. To the east lie the San Jacinto Mountains and the Colorado Desert; to the west, the Pacific Coastal Plain; and to the north are the Transverse Ranges. The elevation of the valley floor ranges from 1400 to 1800 feet.

Earthquakes, originating as shock waves generated by movement along active faults, are the main seismic hazard of the area. Primary seismic hazards which result from earthquakes are groundshaking and the potential for rupture along surface traces of faults. Secondary seismic hazards result from the effects of groundshaking on soils and bedrock, and include liquefaction, landslides, seiches (damaging standing waves in small bodies of water), and dam collapse.

3.8.1 Main Base

The Main Base is located on recent alluvium deposited in the Quaternary period. This alluvium constitutes the floor of the Perris Valley, and generally is composed of unconsolidated stream, river channel, and alluvial fan deposits that reach thicknesses of up to 2000 feet (see Figure 3.8-1). Both the alluvium and the Perris Block -- a major structural feature which is overlain by the alluvium on its eastern edge -- are bounded on the southwest by the Chino and Elsinore fault zones, on the north by the Cucamonga fault zone, and on the northeast by the San Jacinto fault zone, giving rise to tectonic activity in the area (see Figure 3.8-2). Running roughly parallel northeast of the San Jacinto fault, is the San Andreas fault.

Each of these faults lies within 20 miles of the Main Base; the San Jacinto and San Andreas faults are the most significant for potential groundshaking. The San Jacinto fault, seven miles from the site, is the most active fault in Southern California, producing significant sized earthquakes with Richter magnitudes of 6.0-7.0. The San Andreas fault, 15 miles from the site, although less active, has the potential for producing earthquakes of Richter magnitude 8.0 (County of Riverside Planning Department, Steve Kupferman, personal communication, 1987). No faults are present on the site itself.

As with surface topography on most of the Perris Valley alluvium, relief on the Main Base is slight. There is a gentle grade from 1547 feet in the northwest to 1501 feet in the southeast.

3.8.2 West March

The western half of March AFB is located on the Perris Block, and consists of granitic bedrock terrain dating from the Cretaceous period of the Mesozoic era. West March lies closer than the Main Base to the Chino-Elsinore fault zone, but

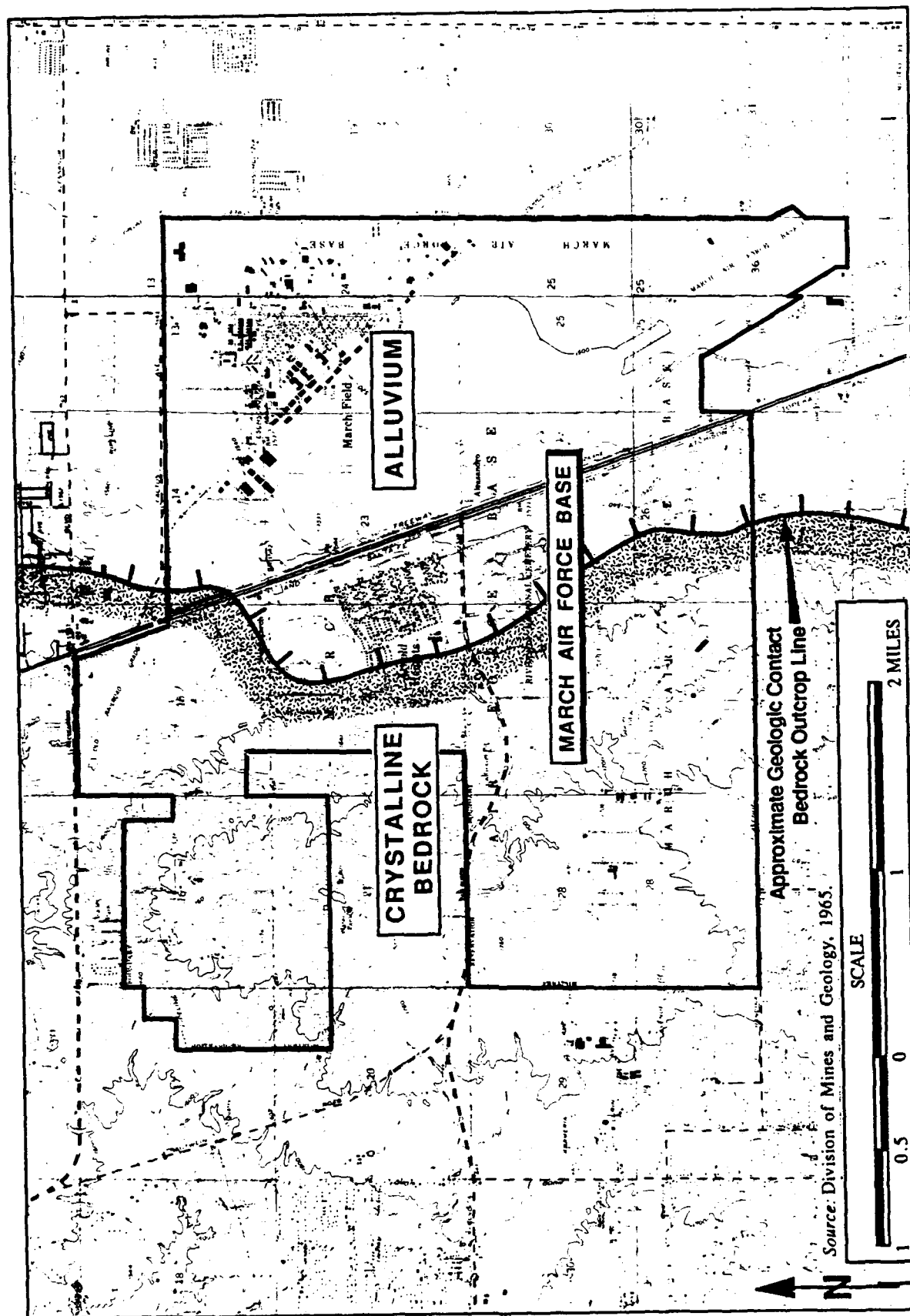


Figure 3.8-1
GEOLOGY UNDERLYING MARCH AFB

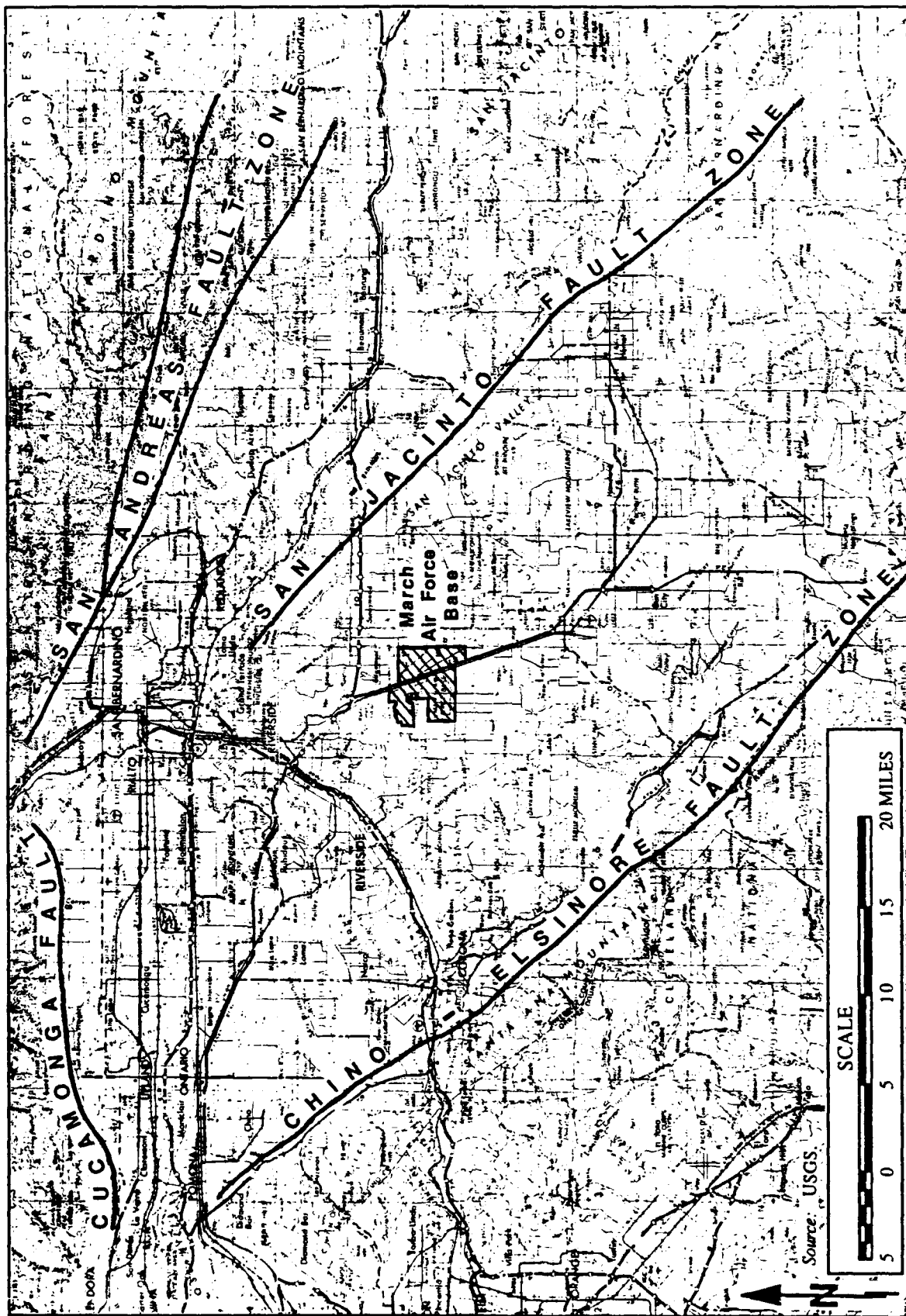


Figure 3.8-2
 FAULTS IN THE VICINITY OF MARCH AFB

again, it is the San Andreas fault and the San Jacinto fault that are the most significant for potential groundshaking. No faults are present on the site itself.

The site is underlain by crystalline, granitic bedrock (tonalite and diorite) which weathers to expose common boulders (Division of Mines and Geology, 1965; 1967). Occasional unweathered bedrock outcrops, ranging from rock clusters to large boulders (up to 20 by 40 feet), are found on the site.

The topography of the site is characterized by a gentle grade from northwest to southeast; maximum relief is approximately 100 feet. The highest elevation is 1783 feet in the northwestern area of the site, and the lowest elevation of 1683 feet is in its southern margin.

3.9 SOILS

The most extensive and detailed survey of the soils of western Riverside County was completed in 1971 by the Soil Conservation Service (1971). With the exception of land use changes, complete inventory to subseries level remains accurate.

3.9.1 Main Base

Five soil series dominate the Main Base area: the Ramona, Monserate, Hanford, Greenfield, and Exeter series (see Table 3.9-1). Due to the gentle terrain of the site, each soil type is deep and well-drained. The selected locations for the proposed NCO Professional Education Center and the 15th Air Force Band Center are on Ramona sandy loams (RaA), and the 15th Air Force Headquarters is on Monserate sandy loams (MmB).

The Ramona Series include deep (68-74 in), well-drained soils formed on alluvial fans and terraces, which are commonly used for both agricultural and nonfarming (building site) purposes. On the Main Base, the slopes of these Ramona sandy loams range from 0-2 percent, leading to slow runoff and to a slight erosion hazard.

The Monserate Series are depositional soils derived from tonalite which have been translocated downslope as alluvium and now occupy level terrain. These soils are well-drained, sandy loams to loams often underlain by a silica-cemented hardpan at 36 to 54 inches. On the Main Base, slopes of these Monserate sandy loams range from 0-5 percent and generate slow runoff, causing a slight erosion hazard (Soil Conservation Service, 1971; U.S. Air Force, 1984a; U.S. Air Force, 1986a).

Other soils of the Hanford, Greenfield, and Exeter series that are found on the Main Base are similar in depth and stability to the previously mentioned soils, but vary in texture and drainage.

3.9.2 West March

On the land conveyance site, a residual soil layer of two to four feet overlies weathered bedrock with a gradational contact zone between the two (Earth Technology Corporation, 1985). Two major soil series exist on the site: the Fallbrook Series and the Monserate Series (see Figure 3.9-1 and Table 3.9-2). Subseries of the both these soils, the Fallbrook fine sandy loam (FfC2) and Monserate sandy loam (MmB), are associated with the Soil Conservation Service designation of "locally important farmland" at West March.

The Fallbrook Series consists of shallow (12-48 in), well-drained soils occurring on uplands and slopes. These soils are sandy loams to fine sandy loams derived from granitic rock (tonalite). Soils of the Fallbrook Series found on the 845-acre site occupy slopes ranging from 8-50 percent, with erosion hazard increasing with the slope. While most of the area covered by Fallbrook soils has either a slight or moderate erosion hazard, soils on the steepest slopes in the northwestern section of the site (subseries FcF2) generate rapid runoff which leads to high erosion hazard (see Figure 3.9-1 and Table 3.9-2).

Table 3.9-1
SOIL CHARACTERISTICS AT THE PROPOSED REPLACEMENT FACILITIES SITES

<u>Mapping Unit</u>	<u>Series</u>	<u>Slopes</u>	<u>Water Holding Capacity</u>	<u>Runoff</u>	<u>Erosion Hazard</u>	<u>Common Area Use</u>
EPA	Exeter sandy loam, deep	0-2%	5.0-7.5 in	slow	slight	irrigated alfalfa, potatoes, and truck crops; dryland grain; homesites
GVA	Greenfield sandy loam	0-2%	7.5-10 in	slow	slight	irrigated citrus, peaches, truck crops, alfalfa; dryland grain and pasture; homesites
HGA	Hanford fine sandy loam	0-2%	7.5-9.5 in	slow	slight	irrigated alfalfa, truck crops; dryland grain and pasture; homesites
MNB	Monserate sandy loam	0-5%	4.0-6.0 in	slow	slight	irrigated truck crops and citrus, dryland grain and pasture, nonfarm purposes
RAA	Ramona sandy loam	0-2%	8.5-9.5 in	slow	slight	irrigated citrus, truck crops, and alfalfa; dryland grain and pasture; homesites

Source: Soil Conservation Service, 1971.

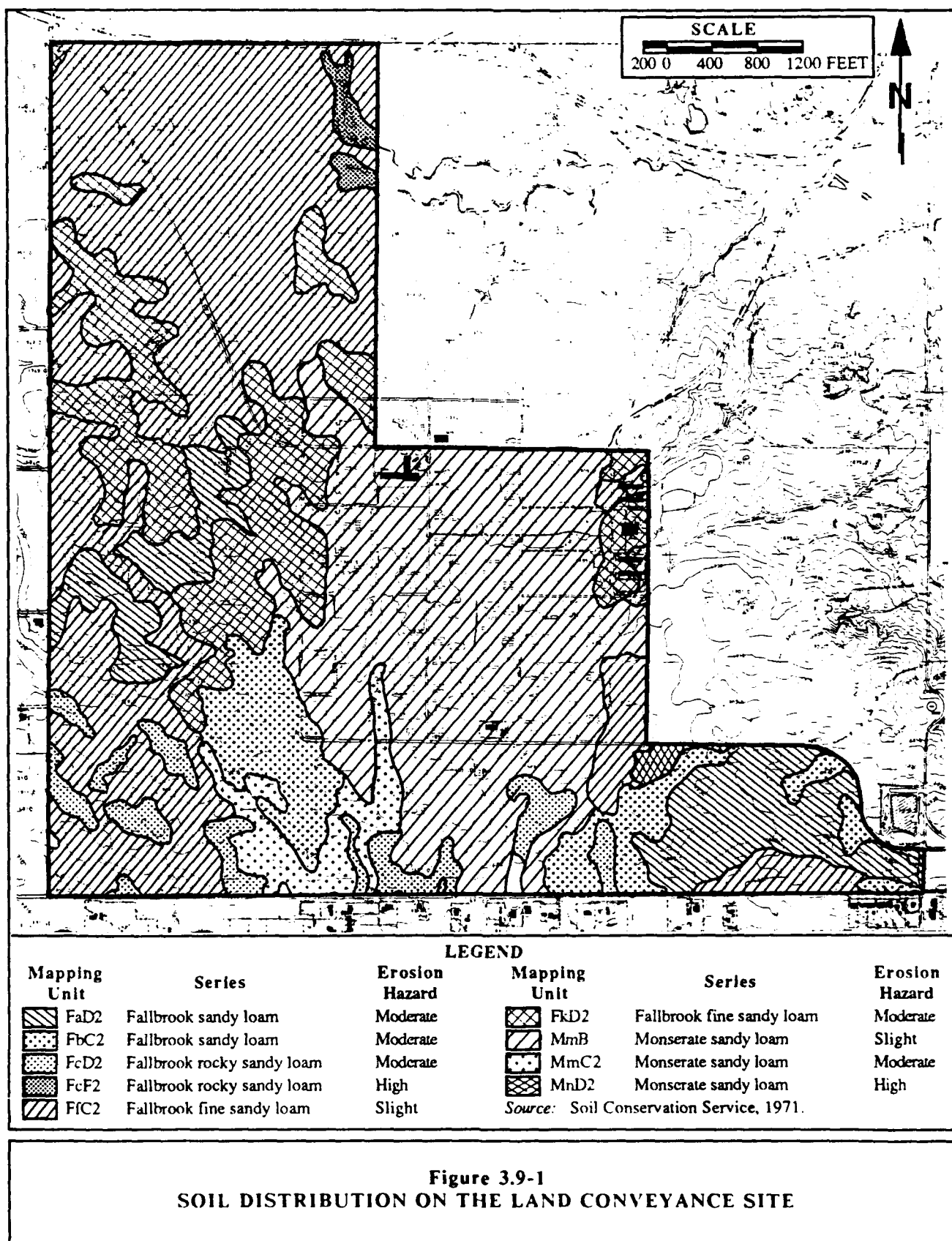


Table 3.9-2
SOIL CHARACTERISTICS AT THE LAND CONVEYANCE SITE

<u>Mapping Unit</u>	<u>Series</u>	<u>Slopes</u>	<u>Water Holding Capacity</u>	<u>Runoff</u>	<u>Erosion Hazard</u>	<u>Common Area Use</u>
FaD2	Fallbrook sandy loam	8-15%	4.0-7.0 in	medium	moderate	dryland grain and pasture, irrigated citrus, homesites
FbC2	Fallbrook sandy loam	5-8%	2.0-3.0 in	medium	moderate	dryland pasture, homesites, irrigated citrus
FcD2	Fallbrook rocky sandy loam	8-15%	2.0-3.0 in	medium	moderate	dryland pasture and range, source of water
FcF2	Fallbrook rocky sandy loam	15-50%	1.5-3.0 in	rapid	high	wildlife habitat, source of water
FfC2	Fallbrook fine sandy loam	2-8%	4.5-7.5 in	slow	slight	dryland pasture, irrigated citrus, homesites
FkD2	Fallbrook fine sandy loam	8-15%	2.0-3.0 in	medium	moderate	dryland grain, pasture; irrigated citrus, homesites
MmB	Monserate sandy loam	0-5%	4.0-6.0 in	slow	slight	irrigated truck crops and citrus, dryland grain and pasture
MmC2	Monserate sandy loam	5-8%	4.0-6.0 in	medium	moderate	irrigated citrus, dryland grain and pasture, nonfarm purposes
MnD2	Monserate sandy loam	5-15%	2.0-3.0 in	rapid	high	dryland pasture and grain, nonfarm purposes

Source: Soil Conservation Service, 1971.

As described above, the Monserate Series are depositional soils situated on level terrain. They are well-drained, sandy loams and loams often underlain by a hardpan (Soil Conservation Service, 1971; U.S. Air Force, 1984a; U.S. Air Force, 1986a). These soils also have a moderate shrink-swell potential. Soils of the Monserate Series occur on slopes from 0-15 percent on the 845-acre parcel, but the majority of area covered by these soils is on slopes of less than eight percent, having a moderate to slight erosion hazard. Soils on steep slopes with rapid runoff and high erosion hazards (subseries MnD2) are found only in the southeast corner of the site.

Both soil series have granular structure and low expansion potential, but, as stated, some soils within these series have high hazards for erosion. Most of the soils are presently maintained in a natural, delicate balance with the region's low rainfall; however, natural erosion hazards are high for soils with low water holding capacities, high surface runoff rates, and steep slopes. Erosion is exacerbated on *all* of the site's soils by reducing water holding capacities and infiltration rates, increasing runoff, or steepening slopes.

3.10 HYDROLOGY, GROUNDWATER, AND WATER QUALITY

March AFB and the Perris Valley lie within the San Jacinto River Basin, which feeds into the Santa Ana River Basin. The climate of the area is considered mediterranean to semiarid with hot, dry summers and cool, moist winters. Annual rainfall at Riverside averages between 10 and 13 inches and peaks seasonally with 90 percent falling between November and May (Soil Conservation Service, 1971). The San Jacinto Basin experiences a yearly water deficit with average annual pan evaporation rate exceeding 84 inches, compared to 10 to 13 inches of yearly precipitation (U.S. Air Force, 1986a).

Surface drainage at March AFB flows into the San Jacinto River and to tributaries of the upper Santa Ana River (see Figure 3.10-1). Although runoff is heavy on the base due to the extent of development, flooding is controlled by an extensive system of open drainage channels, including the Perris Valley Storm Drain which circumscribes the northern and eastern boundaries of the Main Base.

Groundwater in the San Jacinto Basin exists as a closed system: it is fed by precipitation and infiltration, not by groundwater migration into the area (U.S. Air Force, 1986a). Runoff from the surrounding mountains of non-waterbearing rocks, percolation from irrigation, and wastewater effluent disposal contribute to recharge.

Groundwater quality in the area of the base is generally good. Total dissolved solids range from 250 milligrams/liter (mg/l) to 1000 mg/l, with 400-500 mg/l being the most common levels near the base. The potential for groundwater contamination is currently being investigated through the Installation Restoration Program (IRP) (U.S. Air Force, 1986a).

3.10.1 Main Base

Runoff on the Main Base is heavy due to large paved areas: runways, pavements, and buildings. Storm runoff is collected and conveyed through a system of unimproved and improved drainage ditches and a storm drain under the airfield area. The drainage is ultimately directed southwesterly into a drainage ditch and channel system owned and maintained by the Riverside County Flood Control District.

Groundwater occurs in alluvial materials that underlie the Main Base area. Waterbearing sediments are found from approximately 35 to 100 feet. This alluvium is considered as one aquifer since no confining layers have been found and it is recharged by groundwater flow from the western part of the base (U.S. Air Force, 1986a).

3.10.2 West March

No perennial streams exist on the land conveyance site; all streams in the region are ephemeral, flowing only after precipitation. Surface runoff occurs primarily during winter rainfall.

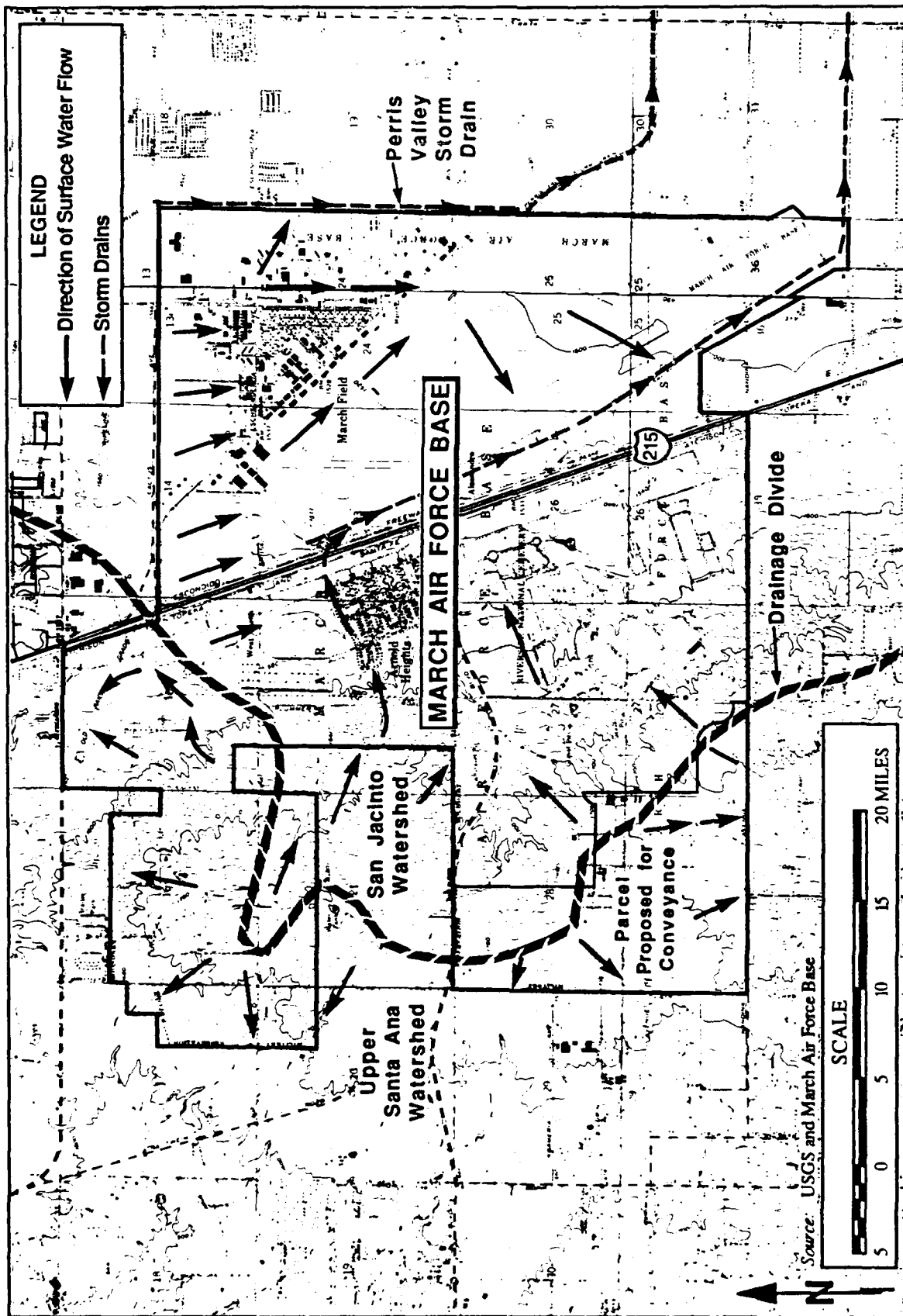


Figure 3.10-1
SURFACE DRAINAGE AT MARCH AFB

Two major drainages, a west-to-east trending gully and a north-to-south system of depressions, occupy the 845-acre site. The gully is in the northwest corner of the site and includes the uppermost ends of two gully branches that continue into an adjacent site. The depressions on the southern side of the site drain surface runoff southward from the site. The site lies outside the 100-year flood plain.

Groundwater occurs in limited quantities under the western part of the base in the shallow weathered rock zone and possibly in fractures and joint systems in bedrock. Water table depths are generally 15 to 25 feet below the ground surface in the weathered rock zones (U.S. Air Force, 1986a).

3.11 VEGETATION

3.11.1 Main Base

The major forms of native vegetation on the Main Base areas proposed for the construction of three new facilities belong to the valley grassland and coastal sage scrub plant communities. Due to their proximity to developed areas that act as a disturbance, these three plots of land are essentially waste fields. Very few native bunch grasses (e.g. *Poa* spp.) of the valley grassland community are present; mostly ruderal or weedy species derived from the two native vegetation communities occupy the sites. These include red-stemmed filaree (*Erodium cicutarium*), short-podded mustard (*Brassica geniculata*), wild radish (*Raphanus sativus*), Russian thistle (*Salsola iberica*), Bermuda grass (*Cynodon dactylon*), California saltbush (*Atriplex californica*), coastal isocoma (*Haplopappus venetus* ssp. *vernonioides*), and horehound (*Marrubium vulgare*).

A list of sensitive plant resources present in the March AFB region is given in Table 3.11-1. Species nomenclature follows Abrams (1923) and Munz (1959). The sources of information are the California Native Plant Society (Smith and York, 1984), and the U.S. Fish and Wildlife Service (see Appendix B). Appropriate habitats for these species are given in Munz (1959) and Michael Brandman Associates (1987), and were corroborated by local botanical experts in Riverside County. Field surveys included a search for these species and their habitats, but none was found.

3.11.2 West March

The main forms of native vegetation on the western part of March AFB are the coastal sage scrub, valley grassland, and riparian plant communities (see Figure 3.11-1). Mature successional stages of these vegetation types do not occur, as most of the area has been disturbed recently. The majority of the 845-acre parcel is plowed land, and has now been colonized by ruderal grassland and coastal sage scrub species (weedy species that establish themselves quickly following disturbances and the removal of natural vegetation). Much of the non-plowed land has been developed and later abandoned, and in these areas similar ruderal species are found. The species composition of this community includes grasses such as slender wild oat (*Avena barbata*), red brome (*Bromus rubens*), foxtail (*Hordeum* sp.), ripgutgrass (*Bromus diandrus*), and *Schismus barbatus*. Native bunch grasses of the undisturbed valley grassland community, such as needle grass (*Stipa pulchra*) and bluegrass (*Poa* spp.), are probably absent.

Unplowed land around rocky areas and gravel pits, and at the edges of stream drainages found in the northern and southern edges of the land parcel, is occupied by a mixed community of grassland and degraded coastal sage scrub species. The latter include California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), mock heather (*Haplopappus ericoides* ssp. *blakei*), coastal isocoma (*Haplopappus venetus* ssp. *vernonioides*), San Joaquin matchweed (*Gutierrezia bracteata*), valley cholla (*Opuntia parryi*), beavertail cactus (*Opuntia basilaris*), and weeds such as *Sisymbrium orientale* and *Raphanus sativus*.

Table 3.11-1
POSSIBLE SENSITIVE PLANT RESOURCES AT MARCH AFB

Species	Common name	CNPS listing *	U.S. FWS listing **	Habitat and elevation	Flowering season
1. <i>Allium fimbria-tum</i> Wats. var. <i>munzii</i> Ownbey and Aase.	Munz' onion	1	/C2	restricted popula-tions, dry slopes and flats, often in heavy soils, at 1000-2000 ft.	April-May
2. <i>Dudleya multi-caulis</i> (Rose) Moran.	Many-stemmed dudleya	1	/C2	dry stony places, in coastal sage scrub and chapar-ral, below 2000 ft.	May-June
3. <i>Harpagonella palmeri</i> (Gray) var. <i>palmeri</i>	Palmer's grappling hook	2		rare and localized populations, dry slopes and mesas, in chaparral, sometimes in clay soils, below 1500 ft.	March-April
4. <i>Brodiaea filifolia</i> Wats.	Thread-leaved hookera	1	CE/C2	local in heavy clay soil, coastal sage scrub and chapar-ral, below 2000 ft.	May-June
5. <i>Caulanthus simulans</i> Pays.	Payson's cau-lanthus	1	/C2	uncommon in rocky places, chaparral, pinyon juniper woodland, 2000-5500 ft.	April-June
6. <i>Ribes canthari-forme</i> Wiggins	Moreno currant	1	/C2	chaparral in the vicinity of Moreno Dam (San Diego County)	Feb.-April
7. <i>Chorizanthe leptoceras</i> (Gray) Wats.	Slender-horned chorizanthel/Spine-flower	1	CE/C1	occasional, sandy places, coastal sage scrub	April-June

TABLE 3.11-1 (continued)

*** CNPS INVENTORY LISTS**

- List 1 - Plants of the highest priority
- List 2 - Plants rare or endangered in California, but common elsewhere
- List 3 - Plants about which more information is needed
- List 4 - Plants of limited distribution (a watch list)

**** STATE/FEDERAL STATUS SPECIES LISTINGS**

- CE - State-listed endangered
- CT - State-listed threatened
- CR - State-listed rare
- FE - Federally-listed endangered
- FT - Federally-listed threatened
- C1 - Federal candidate (enough information to list)
- C1* - Federal candidate (enough information to list, but presumed extinct)
- C2 - Federal candidate (need more information)
- C2* - Federal candidate (need more information, but presumed extinct)
- C3a - Extinct
- C3b - Taxinomically invalid
- C3c - Too common and/or not threatened

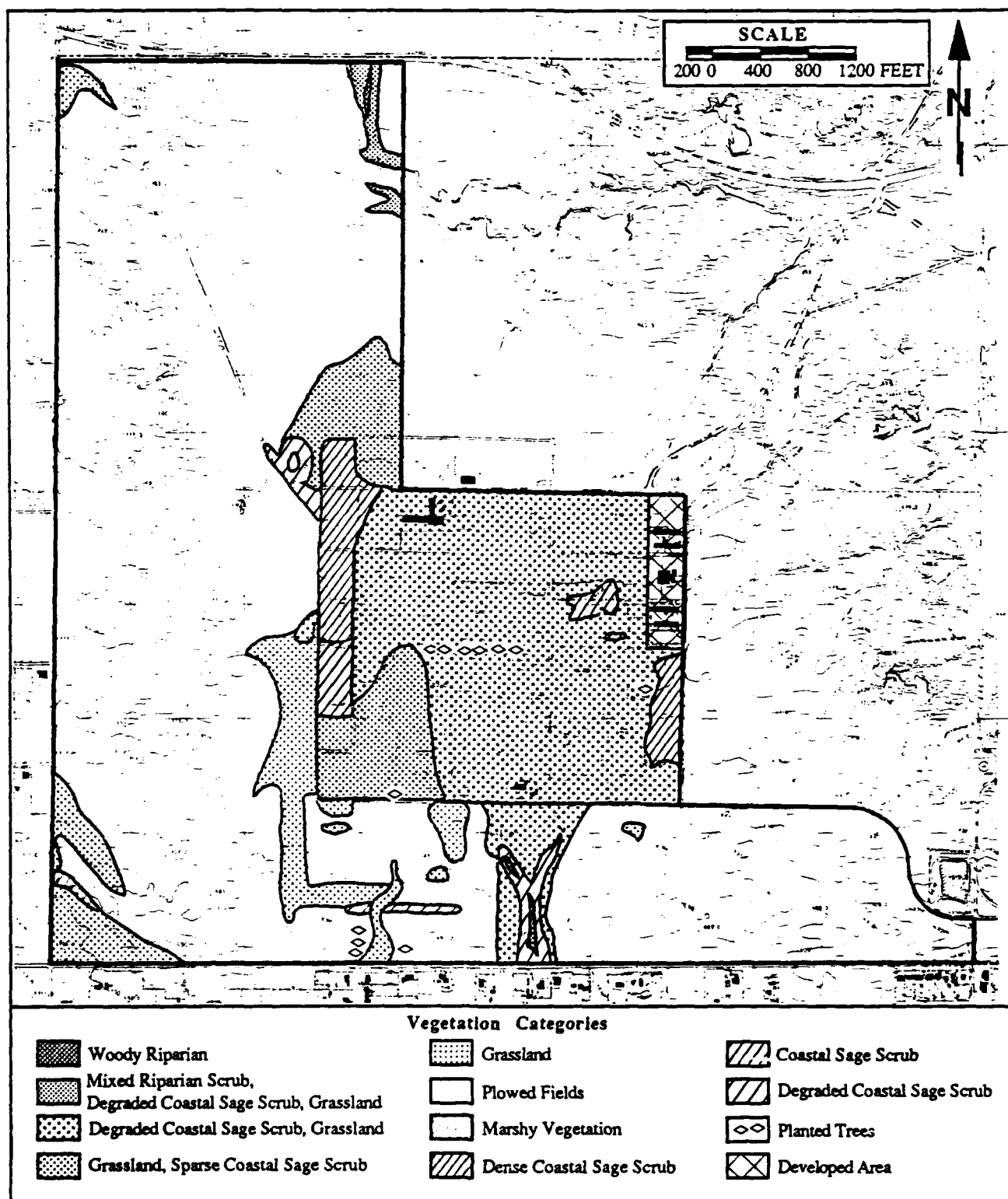


Figure 3.11-1
VEGETATION DISTRIBUTION ON THE LAND CONVEYANCE SITE

Horehound (*Marrubium vulgare*) is also associated with these species, but is particularly dense along roadsides in the central part of the land parcel. Telegraph-weed (*Heterotheca grandiflora*) is found along the roadside at the northern boundary of the site. Where plowed land has been left fallow, a mixture of grassland and coastal sage scrub species is found; for example, as in the northwestern corner of the West March area, where a waste field is occupied primarily by Russian thistle (*Salsola iberica*). Grassland in the southern part of the land parcel includes all the species mentioned above and also pine-bush (*Haplopappus pinifolius*), which is absent in the northern areas.

Woody riparian vegetation is generally in poor condition and occurs within intermittent stream drainages; species include Goodding's willow (*Salix gooddingii* var. *variabilis*), red willow (*Salix lasiandra* var. *lasiandra*), arroyo willow (*Salix lasiolepis* var. *lasiolepis*), and mulefat (*Baccharis glutinosa*). The understory is made up of grasses and coastal sage scrub species. A small area of mesic marshy vegetation is found in the southwestern part of the land, dominated by Dallis grass (*Paspalum dilatatum*).

The central, previously developed area consists of various densities and combinations of grassland and coastal sage scrub species. Most dense patches of coastal sage scrub have been undisturbed recently and consist predominantly of California buckwheat (*Eriogonum fasciculatum*), with scattered California sagebrush (*Artemisia californica*), common corethrogyne (*Corethrogyne filaginifolia* var. *bernardina*), horehound (*Marrubium vulgare*), and mock heather (*Haplopappus ericoides* ssp. *blakei*). Coastal isocoma (*Haplopappus venetus* ssp. *vernonioides*), pine-bush (*Haplopappus pinifolius*), short-podded mustard (*Brassica geniculata*), San Joaquin matchweed (*Gutierrezia bractea*), and tocalote (*Centaurea melitensis*) co-occur with common corethrogyne in grassier areas. Scattered patches of planted trees include pepper-trees (*Schinus molle*) in most areas and tamarisks (*Tamarix* sp.) in the southern part of the land parcel.

An assessment of sensitive plant resources in a neighboring parcel of land was conducted recently by Michael Brandman Associates (1987). That included a search of the appropriate habitats for the first three species listed in Table 3.11-1, none of which was found. A survey by R. D. Niehaus, Inc., personnel in Spring 1988, during the flowering periods of these rare plants, confirmed that the species are absent in the area.

3.12 WILDLIFE

3.12.1 Main Base

The areas proposed as the sites for construction of the three new facilities on the Main Base have been extirpated for considerable time. California ground squirrels (*Spermophilus beecheyi*) and Botta's pocket gophers (*Thomomys bottae*) were the only vertebrates detected during a survey of the sites. Other species that have a high tolerance for human activity can also be expected in these areas, including the black-tailed jack rabbit (*Lepus californicus*), desert cottontail (*Sylvilagus audubonii*), house mouse (*Mus musculus*), western fence lizard (*Sceloporus occidentalis*), and side-blotched lizard (*Uta stansburiana*).

It is very unlikely that any rare, endangered, or regionally declining avian species frequents the site. Species which do frequent this area regularly are primarily those which are relatively common and widespread, such as the American Kestrel, Anna's Hummingbird, Common Raven, Northern Mockingbird, Yellow-rumped Warbler, Brewer's Blackbird, and House Finch.

3.12.2 West March

The Faunal Compendium shown in Table 3.12-1 is a list of species found on the site during field survey, or expected to be present according to available literature. A list of possible sensitive terrestrial vertebrates is given in Table 3.12-2.

Several amphibian species were observed on the site. The Pacific slender salamander (*Batrachoseps pacificus*) was found in the nonnative grassland habitat, and at least two species of frog (*Rana* spp.) were heard calling from the riparian areas.

Two sensitive reptile species, the orange-throated whiptail (*Cnemidophorus hyperythrus*) and the San Diego coast horned lizard (*Phrynosoma coronatum blainvillei*), have been reported on March AFB (CNDDDB, 1987; Michael Brandman Associates, 1987). These two species are listed by the USFWS as Category 2 candidate species (decline of the species is suspected; however, insufficient data exist to support a proposed listing by the USFWS). In addition, the California Natural Diversity Data Base (CNDDDB, 1987) considers the whiptail locally threatened due to an estimated 75 percent reduction of its historical distribution. Both species are found in open, sandy spaces within the sage scrub plant community; however, neither species was observed during the present survey.

Only two reptile species, the side-blotched lizard (*Uta stansburiana*) and western fence lizard (*Sceloporus occidentalis*), were observed on the project site. These lizards usually remain in the relatively open areas near building remains and rock outcroppings. Due to the midwinter conditions at the time of the survey many reptiles on the site were expected to be inactive or in hibernation.

Habitat for the Stephens' kangaroo rat (*Dipodomys stephensi*), listed as threatened by the California Department of Fish and Game and proposed for listing as endangered by the USFWS (as of November 1987), is found in the nonnative grassland covering approximately 196 acres of the property. Live trapping was performed to confirm the presence of this species.

Table 3.12-1
FAUNAL COMPENDIUM [1]

LEGEND

ABUNDANCE

c - common
f - fairly common
u - uncommon
o - occasional
s - scarce

STATUS

+ Presence noted by direct sighting, call identification or observation of tracks, scat or other signs.

* Nonnative

HABITATS

RIP Riparian
NNG Nonnative grassland
RUD Ruderal field
CSS Coastal sage scrub (degraded)

[1] List includes species observed or expected to occur on or in the immediate vicinity of the site.

Table 3.12-1
FAUNAL COMPENDIUM
(Page 2 of 6)

TERRESTRIAL VERTEBRATES

	<u>RIP</u>	<u>NNG</u>	<u>RUD</u>	<u>CSS</u>
AMPHIBIANS				
PLETHODONTIDAE - LUNGLESS SALAMANDERS				
+ <u>Batrachoseps pacificus</u> Pacific slender salamander	s	o	-	-
BUFONIDAE - TRUE TOADS				
<u>Bufo boreas</u> western toad	c	c	o	-
HYLIDAE - TREEFROGS				
<u>Hyla regilla</u> Pacific treefrog	c	-	-	-
RANIDAE - TRUE FROGS				
+ <u>Rana</u> sp. frog	c	-	-	-
REPTILES				
GEKKONIDAE - GECKOS				
<u>Coleonyx variegatus</u> banded gecko	-	-	-	s
IGUANIDAE - IGUANID LIZARDS				
<u>Phrynosoma coronatum</u> coast horned lizard	-	s	s	o
+ <u>Sceloporus occidentalis</u> western fence lizard	-	c	o	c
+ <u>Uta stansburiana</u> side-blotched lizard	-	c	o	c
TEIIDAE - WHIPTAIL LIZARDS				
<u>Cnemidophorus hyperythrus</u> orange-throated whiptail	-	o	s	s
<u>Cnemidophorus tigris</u> western whiptail	-	o	s	o

Table 3.12-1
FAUNAL COMPENDIUM
(Page 3 of 6)

	<u>RIP</u>	<u>NNG</u>	<u>RUD</u>	<u>CSS</u>
ANGUIDAE - ALLIGATOR LIZARDS				
<u>Gerrhonotus multicarinatus</u> southern alligator lizard	o	f	f	f
COLUBRIDAE - COLUBRID SNAKES				
<u>Coluber constrictor</u> racer	f	f	o	s
<u>Contia tenuis</u> sharp-tailed snake	o	o	s	s
<u>Masticophis flagellum</u> coachwhip	-	o	o	o
<u>Pituophis metanoleucus</u> gopher snake	f	f	f	f
<u>Thamnophis</u> sp. garter snake	f	f	o	s
VIPERIDAE - VIPERS				
<u>Crotalus viridis</u> western rattlesnake	u	f	o	f
MAMMALS				
DIDELPHIDAE - NEW WORLD OPOSSUMS				
+* <u>Didelphis virginiana</u> Virginia opossum	f	f	f	u
TALPIDAE - MOLES				
<u>Scapanus latimanus</u> broad-footed mole	u	u	u	u
PHYLLOSTOMIDAE - LEAF-NOSED BATS				
<u>Macrotus californicus</u> California leaf-nosed bat	NA	NA	NA	NA
VESPERTILIONIDAE - EVENING BATS				
<u>Myotis lucifugus</u> little brown myotis	NA	NA	NA	NA
<u>Myotis yumanensis</u> Yuma myotis	NA	NA	NA	NA

Table 3.12-1
FAUNAL COMPENDIUM
(Page 4 of 6)

	<u>RIP</u>	<u>NNG</u>	<u>RUD</u>	<u>CSS</u>
<u>Myotis evotis</u> long-eared myotis	NA	NA	NA	NA
<u>Myotis thysanodes</u> fringed myotis	NA	NA	NA	NA
<u>Myotis volans</u> long-legged myotis	NA	NA	NA	NA
<u>Myotis californicus</u> California myotis	NA	NA	NA	NA
<u>Myotis leibii</u> small-footed myotis	NA	NA	NA	NA
<u>Pipistrellus hesperus</u> western pipistrelle	NA	NA	NA	NA
<u>Eptesicus fuscus</u> big brown bat	NA	NA	NA	NA
<u>Lasiurus borealis</u> red bat	NA	NA	NA	NA
<u>Lasiurus cinereus</u> hoary bat	NA	NA	NA	NA
<u>Plecotus townsendii</u> Townsend's big-eared bat	NA	NA	NA	NA
<u>Antrozous pallidus</u> pallid bat	NA	NA	NA	NA
MOLOSSIDAE - FREE-TAILED BATS				
<u>Tadarida brasiliensis</u> Brazilian free-tailed bat	NA	NA	NA	NA
<u>Tadarida femorosacca</u> pocketed free-tailed bat	NA	NA	NA	NA
<u>Eumops perotis</u> western mastiff bat	NA	NA	NA	NA

Table 3.12-1
FAUNAL COMPENDIUM
(Page 5 of 6)

	<u>RIP</u>	<u>NNG</u>	<u>RUD</u>	<u>CSS</u>
LEPORIDAE - HARES & RABBITS				
+ <u>Sylvilagus audubonii</u> desert cottontail	c	c	c	c
+ <u>Lepus californicus</u> black-tailed jack rabbit	c	c	c	c
SCIURIDAE - SQUIRRELS				
+ <u>Spermophilus beecheyi</u> California ground squirrel	c	c	c	c
GEOMYIDAE - POCKET GOPHERS				
+ <u>Thomomys bottae</u> Botta's pocket gopher	c	c	c	c
HETEROMYIDAE - POCKET MICE & KANGAROO RATS				
<u>Perognathus longimembris</u> little pocket mouse	u	u	s	u
<u>Perognathus californicus</u> California pocket mouse	u	u	s	c
+ <u>Dipodomys agilis</u> agile kangaroo rat	-	s	s	f
+ <u>Dipodomys stephensi</u> Stephens' kangaroo rat	-	u	s	s
CRICETIDAE - NEW WORLD RATS & MICE				
<u>Reithrodontomys megalotis</u> western harvest mouse	u	u	s	u
+ <u>Peromyscus maniculatus</u> deer mouse	f	f	f	f
<u>Peromyscus crinitus</u> canyon mouse	o	o	-	o
<u>Onychomys torridus</u> southern grasshopper mouse	s	o	-	o
<u>Neotoma lepida</u> desert woodrat	s	o	o	s
<u>Neotoma fuscipes</u> dusky-footed woodrat	s	o	o	s

Table 3.12-1
FAUNAL COMPENDIUM
(Page 6 of 6)

	<u>RIP</u>	<u>NNG</u>	<u>RUD</u>	<u>CSS</u>
MURIDAE - OLD WORLD RATS & MICE				
* <u>Rattus rattus</u> black rat	o	o	s	o
* <u>Mus musculus</u> house mouse	o	o	s	o
CANIDAE - WOLVES & FOXES				
+ <u>Canis latrans</u> coyote	f	f	f	f
** <u>Canis familiaris</u> domestic dog	f	f	f	f
<u>Urocyon cinereoargenteus</u> gray fox	u	u	u	u
PROCYONIDAE - RACCOONS				
<u>Procyon lotor</u> raccoon	u	o	o	o
MUSTELIDAE - WEASELS, SKUNKS & OTTERS				
<u>Mustela frenata</u> long-tailed weasel	u	u	u	u
<u>Spilogale gracilis</u> western spotted skunk	o	o	o	o
+ <u>Mephitis mephitis</u> striped skunk	f	o	o	o
FELIDAE - CATS				
** <u>Felis catus</u> domestic cat	f	f	f	f
<u>Felis rufus</u> bobcat	u	o	o	o
CERVIDAE - DEERS				
<u>Odocoileus hemionus</u> mule deer	o	s	s	s
BOVIDAE - BISON, GOATS & SHEEP				
+ <u>Ovis aries</u> domestic sheep	s	s	s	s

Table 3.12-2
POSSIBLE SENSITIVE TERRESTRIAL VERTEBRATES
AT MARCH AFB

<u>Species</u>	<u>Common Name</u>	<u>USFWS Listing</u>	<u>State Listing</u>	<u>Habitat</u>	<u>Occurrence On Project Site</u>
<u>Phrynosoma coronatum blainvillei</u>	San Diego Coast Horned Lizard	Candidate 2	-	Sandy Areas in Coastal Sage Scrub	Likely
<u>Cnemidophorus hyperythrus</u>	Orange-throated Whiptail	Candidate 2	-	Sandy Areas in Open Coastal Sage Scrub	Likely
<u>Dipodomys stephensi</u>	Stephens' Kangaroo Rat	Proposed ENDANGERED	Threatened	Open Grassland Near Coastal Sage Scrub	Confirmed

The most obvious mammal species on the property are the desert cottontail (*Sylvilagus audubonii*) and the California ground squirrel (*Spermophilus beecheyi*). Black-tailed jack rabbits (*Lepus californicus*) are also readily seen on the property. These species forage throughout the property but center their activities around the cover provided by the rock outcroppings and riparian areas.

Several unidentified bat species were observed foraging over the property. Larger mammals utilize the stream and associated riparian area for water and cover, often foraging on the rest of the project site. These include the coyote (*Canis latrans*), Virginia opossum (*Didelphis virginiana*) and striped skunk (*Mephitis mephitis*).

The West March area is foraging habitat for a variety of raptor species; those seen during the survey are: Northern Harrier (2), Red-tailed Hawk (5), Ferruginous Hawk (1), Golden Eagle (1, adult), American Kestrel (2), and Prairie Falcon (1). No bird species officially classified as rare and endangered were found (Table 3.12-3). However, the Ferruginous Hawk is a candidate species for listing as an endangered and threatened species; small numbers winter in extensive grassland and some agricultural areas in coastal Southern California. The Northern Harrier and Prairie Falcon are both on California Department of Fish and Games list of "Species of Special Concern" and occur in small numbers in coastal southern California, primarily in winter. The fully-protected Golden Eagle is now very scarce in the lowlands of coastal Southern California, with most individuals occurring there during the fall and winter. Other raptor species which might utilize the site, but were not observed during the survey, include the state-protected Black-shouldered kite and the proposed endangered and threatened Swainsons' Hawk. The latter species is likely a rare or very rare migrant visitor which winters in South America. The seriously declining and California Fish and Game "species of special concern" listed Short-eared Owl is a potential rare visitor to the site, as it is known to winter in very small numbers in the San Jacinto Valley to the east. The combination of habitat type and numerous ground-squirrel burrows also gives this area good potential for supporting the severely declining Burrowing Owl.

Non-raptor species seen on the site were comparatively few in number and are relatively numerous and widespread in open country habitats in this region. The one exception is the Vesper Sparrow, a grassland species now fairly rare and declining as a winterer along the coastal slope of Southern California.

Table 3.12-3
AVIAN SPECIES OBSERVED ON THE PROPOSED LAND CONVEYANCE SITE
21 JANUARY 1988

Northern Harrier - 2	Northern Mockingbird - 1
Red-tailed Hawk - 4	Water Pipit - 55
Ferruginous Hawk - 1	Loggerhead Shrike - 2
Golden Eagle -1 (adult)	Eurasian Starling - 8
American Kestrel - 2	Yellow-rumped Warbler - 3
Prairie Falcon - 1	Vesper Sparrow - 5
Killdeer - 2	Savannah Sparrow - 4
Mourning Dove - 35	Western Meadowlark - 17
Anna's Hummingbird - 2	Brewer's Blackbird - 6
Horned Lark - 30	House Finch - 28
Common Raven - 4	

Source: Field Survey

3.13 CULTURAL RESOURCES

3.13.1 Main Base

In May 1986, an assessment was made of cultural resources present at the three proposed facility locations on the Main Base (U.S. Air Force, 1986b). The study consisted of three phases of research. One was a review of the preliminary historical inventory compiled for March AFB (cf. U.S. Air Force, 1985b), to determine if any noteworthy historic cultural resources were present at (or near) the proposed facility locations. A second phase of the project comprised an examination of site records, maintained at the Regional Archaeological Information Center, University of California, Riverside, to determine if any known archaeological sites were present in the immediate area of interest. Finally, the 32 acres which will be affected directly by construction of the three facilities were inspected for the presence of archaeological remains. The latter process consisted of a survey of the proposed construction areas by an archaeologist, who systematically traversed them on foot at intervals approximately 15 meters apart. Two separate parcels on the eastern portion of the Main Base were covered in the survey: a section of ground along the west side of 8th Street, south from Meyer Drive to the Commissary and approximately 225 meters in width; and a section of ground measuring approximately 200 meters square along the east side of Riverside Drive, some 250 meters north of the Riverside Drive-Meyer Drive intersection (see Figure 3.1-1 above).

Although the aforementioned historical inventory notes that the original square mile of March AFB, established in 1918 (bounded on the north by Meyer Drive, and on the east by Riverside Drive), does indeed meet the criteria for inclusion on the National Register of Historic Places, the parcels of present concern lie beyond these original bounds. The examination of regional archaeological records indicated the presence of no known cultural resources in the immediate project area. Similarly, the archaeological survey discovered no cultural resources on the 32-acre tract of interest.

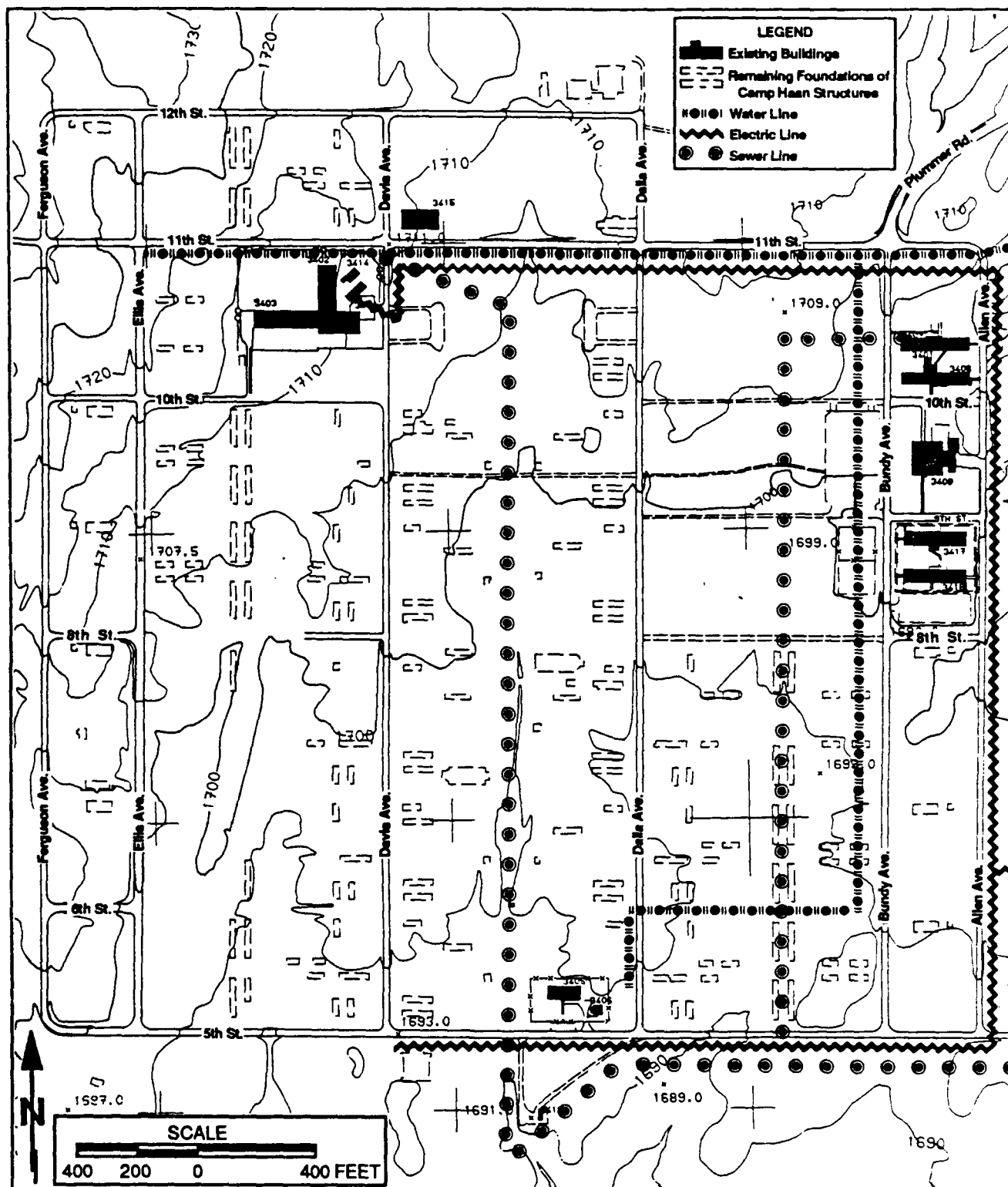
3.13.2 West March

A previous assessment of cultural resources on the 845-acre land conveyance tract was completed in June 1987 (Archaeological Research Unit, UCR, 1987). This study once again comprised three research phases: an examination of the preliminary historical inventory for March AFB, cited above; a perusal of archaeological site records for the general area; and an intensive survey of the 845-acre parcel by a five-person crew, which traversed the area with individuals spaced 20 meters apart. In this case, the survey area was delimited by a number of public and local (West March) access roads. The public roads of interest include Van Buren Boulevard, which forms the northern boundary of the area, Barton Street which forms the western boundary of the area, and Nandina Avenue, which forms the southern boundary of the area. The local access roads of interest, together forming the eastern boundary of the survey area, include (beginning in the south) an eastern extension of 5th Street from Allen Avenue to a (disconnected) northern extension of Clark Street, Allen Avenue itself, 11th Street from Allen Avenue to Dalla Avenue,

and Dalla Avenue north from 11th Street (the line of Dalla Avenue extending northward to Van Buren Boulevard to complete the definition of the survey area). Various utility lines also enter the survey area, from the east: a sewer line, entering at the intersection of Allen Avenue and 5th Street; overhead electrical service, entering about 100 meters north of 5th Street; and a water line entering at 11th Street (U.S. Air Force, 1988a; see Figure 3.13-1; see also Figure 3.5-2 above).

Examinations of the historical inventory and pertinent archaeological records did not reveal the presence of significant historical or archaeological remains on the land conveyance tract. The archaeological survey, however, succeeded in locating 19 sites. Eighteen of the sites discovered represent bedrock mortars (Archaeological Research Unit, UCR, 1987, p. 1). Also known as 'grinding slicks', such sites usually consist of granitic boulders of varying sizes into which shallow basins have been abraded -- presumably the result of aboriginal inhabitants of the area grinding seeds, other plant foods, and possibly the flesh of small animals as one step in food preparation (cf. Kroeber, 1925, pp. 649-653, 695-697). The age of these bedrock mortar sites is uncertain, as they do not occur in association with any artifactual material which could be used to date them. According to excavations conducted at the nearby Perris Reservoir (O'Connell et al., 1974), human occupation in the general area occurred as early as 2300 B.P. (years before present). However, ethnographic literature for the Cahuilla Indians, the aboriginal group found in this area during historic times, as well as for the nearby Luiseno Indians to the west, suggests that both prepared food by grinding as recently as the late 19th and early 20th centuries (Bean, 1978, p. 578; Bean and Shipek, 1978, p. 552), although only the latter is known ethnographically to have used bedrock mortars (Kroeber 1925, pp. 653, 697). As indicated in Figure 3.13-2, most of the bedrock mortar sites in the study area tend to occur in linear spatial arrangements, some along relatively higher elevations in the western and southern portions of the 845-acre tract, and others along an arroyo in its northern section. In addition to the 18 bedrock mortars, the archaeological survey also discovered three isolated artifacts: a broken, bifacial granite metate; a white chalcedony core; and a mano, with one end noticeably battered (Archaeological Research Unit, UCR, 1987, p. 1, Appendix I, site report forms). As was the case with the mortar sites, these artifacts could not be dated. Details of the locations and descriptions of the archaeological sites and isolated artifacts may be found in the aforementioned archaeological assessment prepared by the UCR Archaeological Research Unit.

The other site recorded by the archaeological survey represents a portion of the remains of the Camp Haan Coast Artillery (Antiaircraft) Training Center (Archaeological Research Unit, UCR, 1987, pp. 1-5). In operation from 10 January 1941 until 31 August 1946, this installation functioned at various points in its history as an antiaircraft artillery replacement training center, an Army Service Forces Depot, a Base Prisoner of War camp, and a separation center; the Southwest Branch of the U.S. Disciplinary Barracks was also located at the installation (War Department, Office of the Chief of Engineers, 1945; Provost Marshall General, 1944; Provost Marshall General, 1945; Provost Marshall General, 1946; Roberts, 1987). Camp Haan as a whole was quite large, with its roughly trapezoidal shape covering 8,058 acres -- though the majority of this area was undeveloped and used for training purposes (War Department, Office of the Chief of Engineers, 1945, p. 1; Patterson, 1954). At the height of its operation, the camp contained 353 wooden buildings, 2,459 tent platforms, and some 20 miles of streets, with as many as 80,000 personnel reportedly stationed there at one time (Patterson, 1954; 1971, p. 405).



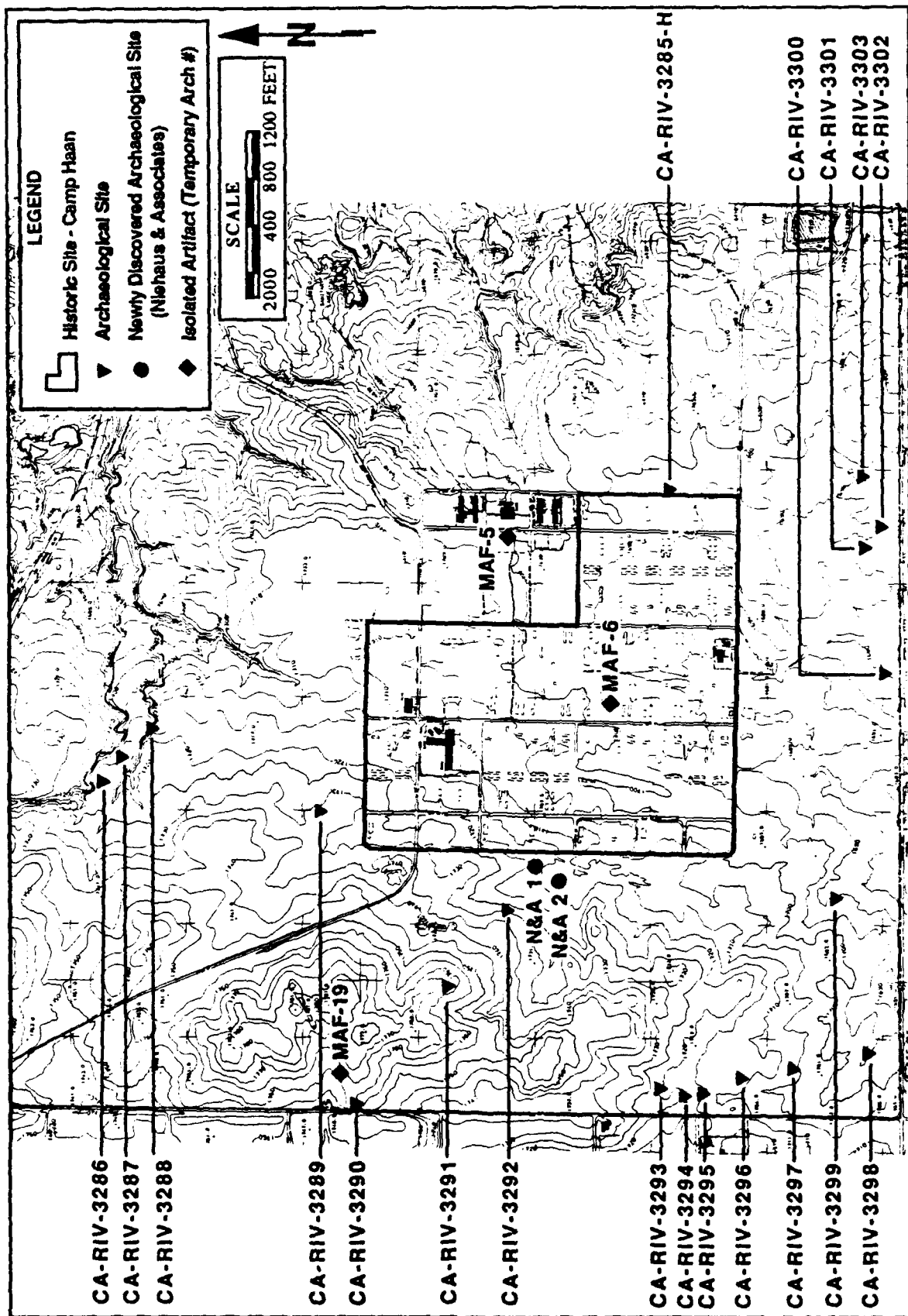


Figure 3.13-2
ARCHAEOLOGICAL SITES AND ISOLATED ARTIFACTS
ON THE LAND CONVEYANCE SITE

Of the 845 acres comprising the land conveyance tract, roughly one-fourth (in the east-central portion of the project area) contains remnants of Camp Haan. Specifically, these remnants are the remains of a 13 battalion cantonment known at the time it was functioning by the name "Topside". This cantonment was built after the initial phase of installation construction in late 1940, and located in the southwestern portion of the camp (War Department, Office of the Chief of Engineers, 1945, p. 1). The historic remains on the land conveyance parcel consist primarily of building foundations (Archaeological Research Unit, UCR, 1987, p. 9), but also include a network of roads, the ruins of a multiroom disciplinary barracks, a number of concrete pilings which formed the bases for floored tents, several large concrete pipes (with circular concrete caps) sunk into the ground (probably originally linked to the underground camp utility system), and various artifacts such as sections of conduit and miscellaneous electrical fittings. A total of 180 building foundations are found on the land conveyance tract. Although they encompass a number of different shapes and sizes (Figure 3.13-3; Table 3.13-1), each consists of a poured concrete floor with a typically short (c. 15-25 cm. high, 15 cm. wide) poured foundation wall around its perimeter. With the exception of two larger foundations for theater-like buildings, which were recessed partially below ground level, all of the remains of structures in the Camp Haan area lie on the surface. This observation is consistent with the reported rapid construction of the installation (5,000 construction workers completing most of the camp in only 150 days; Patterson, 1954) and the temporary nature of much of the structures contained within it (War Department, Office of the Chief of Engineers, 1945). After the war, Camp Haan was declared surplus (in August 1946); the structures comprising the camp were removed shortly thereafter, and many of them auctioned off (e.g., War Assets Administration, 1947).

In addition to the 19 archaeological sites discovered by the cultural resources survey of the land conveyance parcel, cited immediately above, two more sites were discovered by Niehaus & Associates personnel while visiting the project area in October 1987. Both of these sites are bedrock mortars of the same general type discussed earlier. Their locations are presented in Figure 3.13-2, with detailed descriptions of each contained in Appendix C.

Table 3.13-1
CAMP HAAN BUILDING FOUNDATIONS PRESENT ON THE LAND CONVEYANCE PARCEL

Category	Approximate Dimensions (ft.)	Number Observed
1	135x25	29
2	80x30	6
3	23x23	7
4	160x60	1
5	175x60	1
6	60x20	71
7	90x20	37
8	80x30	2
9	80x25	1
10	40x20	8
11	35x20	11
12	75x20	1
13	50x20	1
14	100x30	1
15	100x25	1
16	35x25	1
17	90x20	1
Total		180

Notes: Dimensions and counts extracted from 1:400 series of utility maps of West March (U.S. Air Force, 1988a); categories were defined based upon foundation-floor size and morphology.

4. ENVIRONMENTAL CONSEQUENCES

4.1 LAND USE

4.1.1 Methodology

The impact of the proposed action on existing land uses on and off base was analyzed with regard to consistency with current land use plans, policies, and regulations, including the County of Riverside Comprehensive General Plan and zoning and land use ordinances. The March AFB Comprehensive Plan also was reviewed for recommendations for land uses in the vicinity compatible with base operations.

Subsequent to the conveyance of the 845-acre parcel by the Air Force, it is likely that development would occur on the property. Three land use scenarios were developed to examine potential impacts of use on the 845-acre parcel. The three scenarios for potential development were formulated, based on:

- o interviews with local planning officials regarding their assessments of an appropriate development of the site;
- o review of the Orangecrest Specific Plan, which describes an adjacent planned development; and
- o the March AFB statement of acceptable uses.

These scenarios were designed to provide a comparison between potential land uses for the site. A fourth scenario consisting of rural residential development (densities of one dwelling unit per half acre) without sewer service (i.e., with septic tanks) is considered an inappropriate use of the site by the County of Riverside (1986a). Such rural residential development, a Category III land use, is generally inconsistent with General Plan policies applicable to the site.

Scenario I is characterized by low- to medium-density single-family residential housing (one to five units per acre). It incorporates a neighborhood commercial center oriented toward the immediate needs of project residents. This center may include, for example, a bank, barbershop, drug store, and small market. Support uses are provided in all three scenarios, including such community facilities as parks, schools, sewer facilities, and open space.

Scenario II represents a higher residential density than Scenario I, with 1-10 units per acre (medium- to high-density). The development would include a mixture of single-family and multi-family housing. In addition to the neighborhood commercial center, a community level commercial center would be developed, probably located on Van Buren Boulevard, given the trend toward commercial uses along the western segment of the road. A community commercial center could consist of various uses, possibly anchored by a supermarket.

Scenario III provides for an industrial park on the site, with the same housing density (1-10 units per acre) and commercial acreage as in Scenario II. The

industrial park could contain light manufacturing, assembling, fabricating, warehousing, wholesale distribution, offices, and research and development.

Table 4.1-1 provides specific data about the number and density of housing units, as well as acreage devoted to each land use type under each scenario. All three scenarios contain single-family residential densities ranging from one to five units per acre. Scenarios II and III also incorporate residential densities of 8-10 units per acre. The support uses are assumed to require 30 acres in all scenarios. Scenario I allows for 10 acres of commercial land, while Scenarios II and III have an additional 20 acres of commercial land. Scenario III includes 50 acres designated for an industrial park.

The residential density assumed for each scenario was derived principally from the Orangecrest Specific Plan on the recommendation of senior planners at the County and City of Riverside. The density of residential development recommended in the Orangecrest Specific Plan was approved after extensive negotiation between developers and city and county planners, and the planners anticipate that a large development on the neighboring 845-acre parcel would be required to have similar residential density to that of Orangecrest. It is assumed that more limited commercial and industrial uses than were proposed for Orangecrest would be appropriate for the conveyance site as retail and employment opportunities would exist nearby in Orangecrest.

4.1.2 Significance Criteria

Inconsistency of the replacement facilities or development on the conveyance parcel with any local plans or ordinances would be considered a significant impact.

4.1.3 Impacts of the Proposed Action

4.1.3.1 New Facilities

Construction of the three replacement facilities is consistent and compatible with existing land uses and future land use plans and operations onbase. The March AFB Comprehensive Plan (U.S. Air Force, 1985a) calls for consolidation of administrative and community service facilities into cohesive complexes on the Main Base and base-wide replacement of substandard structures. Relocation of the three facilities from West March to the Main Base will accomplish both tasks for the 15th Air Force Headquarters, the NCO Professional Education Center, and the 15th Band Center, and can be considered a beneficial impact.

4.1.3.2 Land Conveyance

Potential residential, commercial, or light industrial development of the 845-acre parcel is consistent with the County of Riverside Comprehensive General Plan and compatible with existing development patterns in the area. The general plan specifies predominantly Category II land uses for the area's development. Category II uses are a broad mix of many types and intensities of residential, commercial, and industrial land uses. Residential land uses at a density of two to eight dwelling

Table 4.1-1
ALTERNATIVE LAND USE SCENARIOS
FOR THE LAND CONVEYANCE SITE

<u>Scenario/Use</u>	<u>Units per Acre</u>	<u>Units</u>	<u>Acres</u>	<u>% of Acreage</u>
Scenario I				
Housing	1-5	2,400	805	95
Commercial	-	-	10	1
Support Uses	-	-	30	4
Total	-	-	845	100
Scenario II				
Housing				
Single Family	1-5	1,800	590	69
Multi Family	8-10	1,700	195	23
Subtotal	1-10	3,500	785	92
Commercial	-	-	30	4
Support Uses	-	-	30	4
Total	-	-	845	100
Scenario III				
Housing				
Single Family	1-5	1,700	555	65
Multi Family	8-10	1,600	180	21
Subtotal	1-10	3,300	735	86
Commercial	-	-	30	4
Industrial	-	-	50	6
Support Uses	-	-	30	4
Total	-	-	845	100

Source: Estimated by Niehaus & Associates, 1987.

units per acre, neighborhood and community commercial facilities, and medium industrial land uses are appropriate in this category.

Scenarios I, II, and III are basically consistent with the general plan. However, the scenarios may conflict with certain planning policies, including water and sewer service adequacy and availability, development within existing communities, and compatibility with existing development patterns. These general plan policies and their relation to the alternative land use scenarios are discussed below.

The general plan stipulates that Category II land uses be located within existing communities or within a city's sphere of influence due to the requirements of such land uses for a full range of public services, including water distribution, sewage treatment, and utilities such as natural gas, electricity, and telephone service. The 845-acre site, currently part of March AFB, lies outside the spheres of influence of all surrounding cities as defined by the County of Riverside (see Figure 4.1-1).

Land use compatibility will determine how appropriate the alternative land use scenarios are for the area. Scenario I is likely to be the most compatible with existing and approved land uses that are adjacent to the proposed site. All but one percent of the acreage under Scenario I is planned for residential and support uses. This is consistent with housing proposed to the east onbase, low density housing existing to the south, and medium density housing planned for Orangecrest to the west and north.

All three scenarios are compatible with Air Force aircraft operations onbase and the proposed uses for adjacent March AFB lands. Uses that have been determined to be unacceptable to the Air Force -- tall buildings that would create obstacles to aircraft, industrial operations that would emit clouds of smoke or gases into the air causing visibility problems for pilots, and other uses such as mining, heavy manufacturing and strip development -- would likewise be unacceptable to local planning jurisdictions.

The property is no longer used for dry land farming, however the previously farmed areas of the site are still identified in the general plan as "locally important farmland," a classification established by state and federal agencies. By definition, locally important farmland includes land recently planted with dry land grain crops such as barley, oats, and wheat. Development of the property would require conversion of nearly all 483 acres designated as locally important farmland on the site. The loss of this farmland is an unavoidable adverse impact, but given the specifications in the Riverside County General Plan for Category II development of this portion of the Edgemont/Sunnymead Planning Area, it is not considered significant.

4.1.4 Cumulative Impacts

The construction of the three replacement facilities is a direct response to the March AFB Comprehensive Plan (U.S. Air Force, 1985a) which calls for relocation of administrative and community services into consolidated complexes on the Main Base and replacement of substandard structures throughout the base. As directed by the base's comprehensive plan, the facilities are compatible and consistent with existing land uses and future land use plans and operations on the base.

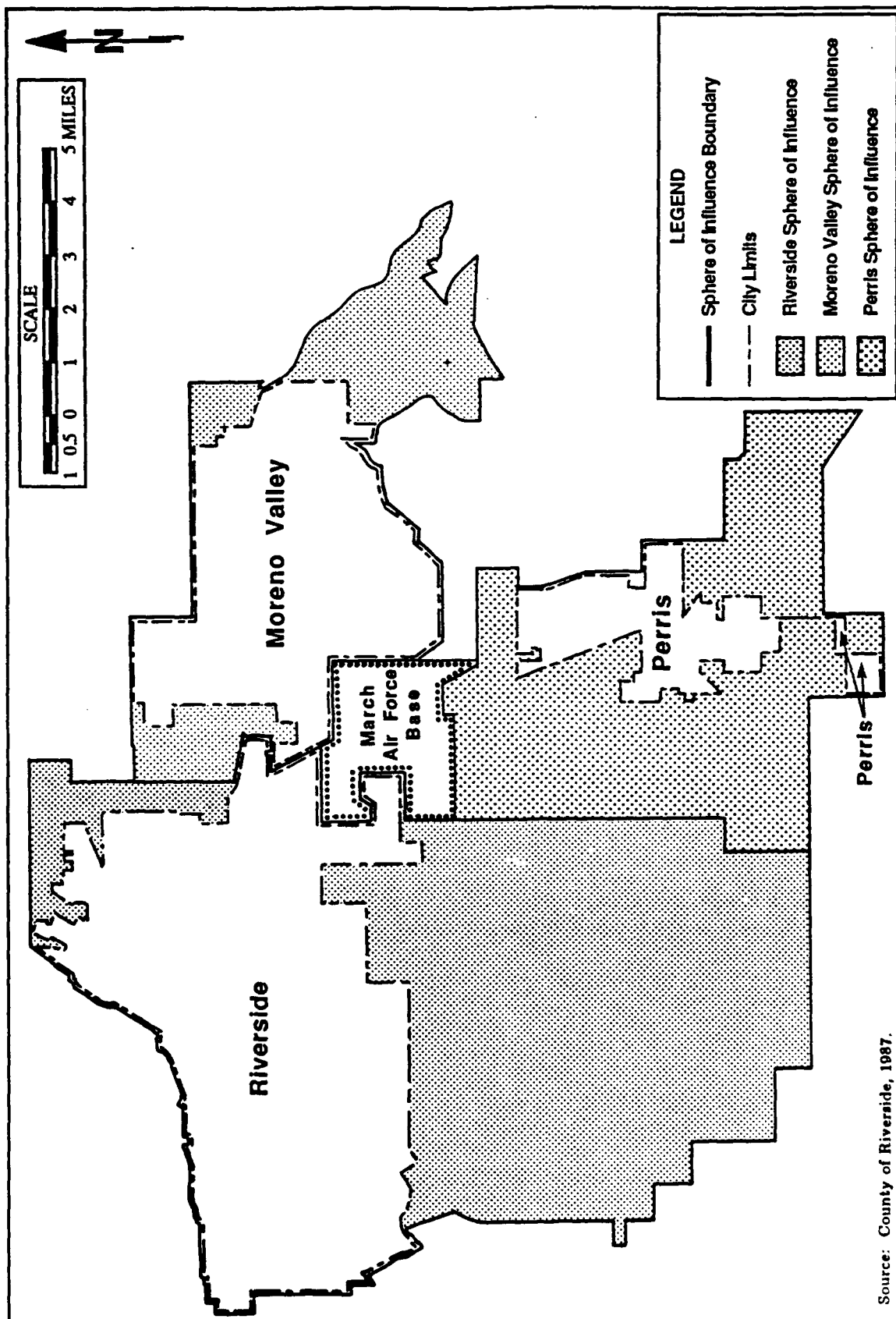


Figure 4.1-1
MUNICIPAL SPHERES OF INFLUENCE SURROUNDING MARCH AFB

In conjunction with other development ventures in the vicinity of West March, the conveyance and subsequent development of the 845-acre parcel (as depicted in the three land use scenarios) is currently considered logical and appropriate improvement according to community land use policies of the Edgemont/Sunnymead Land Use Planning Area (County of Riverside, 1986a). Lately, however, concerns about the rate, character, and cost of growth have been expressed by residents and policy-makers in the area. Residents of the City of Riverside have recently approved Measure C to reduce "urban sprawl" (City of Riverside, 1987) and a similar growth-control initiative is being considered for the county (Kim Jarrell Johnson, County of Riverside, Planning Department, personal communication, 1987). Such measures could potentially affect development on the conveyance site, but are not likely to prevent it.

4.1.5 Impacts of the Alternatives

Under the traditional financing alternative, construction of the facilities would occur without conveyance of the 845-acre parcel. The facilities would remain consistent and compatible with land use policies concerning the Main Base; the conveyance parcel would remain Air Force property and associated development impacts would be eliminated.

Under the no action alternative, replacement of substandard structures and consolidation of services on the base would not be accomplished. This action would be incompatible and inconsistent with the March AFB Comprehensive Plan (U.S. Air Force, 1985a) and future land use plans and operations on the base.

4.1.6 Mitigations

To comply with the general plan requirement that Category II uses lie within a city's sphere of influence to facilitate the purveyance of public services and utilities, either the city of Riverside, Perris, or Moreno Valley would have to expand its sphere of influence to include the 845-acre conveyance parcel prior to development. Arrangements for purveyance of public services and utilities to the site could be made in conjunction with site developers, officials of the County of Riverside, or the cities of Riverside, Perris, or Moreno Valley, and representatives of the utility districts and companies that serve the area.

The development scenarios projected for the 845-acre are compatible with Air Force aircraft operations onbase and the proposed uses for adjacent March AFB lands -- they do not include obstacles to aircraft, sources of visibility-reducing dust or gas, or heavy industrial development. Although these uses are presently considered unacceptable for the area by local planning jurisdictions (County of Riverside, 1986a), they could be precluded from future development through the terms and conditions of the conveyance agreement between the Air Force and the private developer.

4.2 GROWTH AND HOUSING

4.2.1 Methodology

A number of construction jobs would be supported in the local economy and the infusion of project expenditures into the local business sector would support other indirect jobs as subsequent rounds of spending occur. Estimates of the amount of expenditures that would be spent in the region from implementation of the proposed action and the three probable development scenarios were made to determine the level of economic activity that would be supported during construction. These expenditure estimates, or final demand changes, are used to estimate the number of direct and indirect jobs that would be supported in the region. This is accomplished by using county- and industry-specific multipliers (developed by the U.S. Army Corps of Engineers, Construction Engineering Research Laboratory) to estimate indirect output, and by using U.S. average output per worker data (compiled for each industrial sector by the U.S. Department of Labor, Bureau of Labor Statistics) to estimate the number of direct and indirect jobs.

These estimates were made only to determine the order of magnitude of the effects of the proposed action and subsequent development of the 845-acre parcel. This analysis should not be considered an in-depth economic forecast. A more detailed analysis could be prepared at such time that development plans for the 845-acre parcel are specified.

A comparison of the growth in both population and housing associated with the proposed construction of the replacement facilities and the probable development of the 845-acre parcel subsequent to its conveyance were made to determine whether this growth is compatible with projections for the region. The South Coast Area of Governments (SCAG) made growth projections in 1982 based on input from local county and municipal governments in the south coast region.

4.2.2 Significance Criteria

The significance of growth impacts cannot be measured solely in terms of the rate or amount of growth that may occur from a proposed action. The significance of any potential impacts from growth are measured in terms of impacts on land use, housing, public services and finance, traffic, air quality and other resources affected by growth in the region.

The significance of potential housing impacts are determined by the impact the proposed project would have on the availability of existing housing. Vacancy rates are used to measure the availability of housing in Riverside County. An impact on the availability of housing is considered significant if a substantial change in vacancy rates occurs. A change of greater than one-half of one percent in vacancy rates in Riverside County would represent approximately 940 of the 188,000 homes projected for the year 2000. A change created by the proposed project affecting more than this number of housing units is substantial and would be considered a significant impact.

4.2.3 Impacts of the Proposed Action

4.2.3.1 New Facilities

The construction of three new facilities on March AFB would have a small growth-inducing impact on the surrounding area. A number of construction-related jobs would be supported temporarily by the project, and the spending of payrolls earned by construction workers and other project expenditures for goods and services in the local area would support a number of indirect jobs. The impact of these direct and indirect jobs is small in comparison to the size of the local economy.

There were nearly 160,000 jobs in the construction industry in Riverside and San Bernardino Counties in 1984 (U.S. Department of Commerce, 1986). The additional jobs supported by the proposed construction of the three replacement facilities would probably be fewer than 100 full-time equivalent jobs. This level of construction employment is not expected to cause any immigration into the region. Therefore there would not be any substantial change in housing vacancy rates and no significant impact on the area housing stock.

4.2.3.2 Land Conveyance

The probable development of the 845-acre parcel that would be conveyed to private ownership would have a larger growth-inducing impact. A greater number of construction-related jobs would be supported for a longer period of time -- possibly as many as 200-300 construction jobs would be supported for 10 years or longer (assuming that development of the 845-acre parcel would occur in phases over a period of 10 years or more, similar to the adjacent Orangecrest development, which is planned in phases for a period of approximately 15 years). Construction worker spending and project expenditures on goods and services within the region would also support a large number of indirect jobs. This level of construction employment is not expected to cause a large amount of immigration into the region, however, so there would not be any substantial change in housing vacancy rates and no significant impact on the area housing stock.

Growth in housing would be a direct result of the development, and would correspond with population growth. The resulting population increases assume that new residents would move to the RSA into either (1) the newly-built housing on the 845-acre parcel or (2) housing vacated by existing RSA residents that move into the new housing provided by the 845-acre development. The growth associated with the three development scenarios is shown in Table 4.2-1.

Population and housing growth, as a percentage of the SCAG-82 growth forecast is presented in Table 4.2-2. The housing growth that would occur under Scenarios I, II, and III represent 3.6, 5.3, and 5.0 percent of the SCAG-82 growth forecast between 1985 and 2000 in the Riverside RSA, respectively. The housing growth that would occur under these scenarios represent 10.9, 15.9, and 15.0 percent of the SCAG-82 housing growth forecast between 1985 and 2000 in the Riverside A portion of the Riverside RSA. The population growth that would occur represents similar portions of the SCAG-82 population growth forecast between 1985 and 2000 in both the Riverside RSA and Riverside A portion of the RSA as those percentages shown for housing growth.

Table 4.2-1
POPULATION AND HOUSING GROWTH
ASSOCIATED WITH DEVELOPMENT ON THE LAND CONVEYANCE SITE

	<u>New Housing Units</u>	<u>Persons per Household¹</u>	<u>Resulting Population Increase</u>
Scenario I			
Single-Family	2,400	3.3	7,920
Scenario II			
Single Family	1,800	3.3	5,940
Multi Family	1,700	2.8	4,760
Total	3,500		10,700
Scenario III			
Single Family	1,700	3.3	5,610
Multi Family	1,600	2.8	4,480
Total	3,300		10,090

¹ Persons per household assumptions are from the Orangecrest Specific Plan EIR No. 176, prepared for the County of Riverside by Ultrasystems, Inc.

Source: County of Riverside, 1983.

Table 4.2-2
PROJECT-RELATED AND CUMULATIVE POPULATION AND HOUSING GROWTH
AS A PERCENTAGE OF THE SCAG-82 GROWTH FORECAST

	Population			Housing		
	Riverside RSA	Riverside A		Riverside RSA	Riverside A	
SCAG-82 Growth Projection (between 1985-2000)	158,000	54,000		66,000	22,000	
	Scenario			Scenario		
	I	II	III	I	II	III
Project-related Growth	7,920	10,700	10,090	2,400	3,500	3,300
as a percentage of:						
Riverside RSA	5.0%	6.8%	6.4%	3.6%	5.3%	5.0%
Riverside A	14.7%	19.8%	18.7%	10.9%	15.9%	15.0%
Cumulative Growth ¹	21,562	24,342	23,732	7,929	9,029	8,829
as a percentage of:						
Riverside RSA	13.6%	15.4%	15.0%	12.0%	13.7%	13.4%
Riverside A	39.9%	45.1%	43.9%	36.0%	41.0%	40.1%

¹ Cumulative growth assumptions:

Population

11,899 - Maximum population increase associated with Orangecrest Specific Plan development.

1,743 - Maximum population increase associated with March AFB residential development (assuming 1.5 persons per household in the 942 units of the planned Air Force Village West retirement community and 3.3 persons per household in the 100 additional military family housing units that are currently planned).

Housing

4,487 - Total number of new residential units approved under Orangecrest Specific Plan.

1,042 - Net total number of new residential units currently planned on March AFB.

Sources: County of Riverside, 1983; Southern California Association of Governments, 1982; Niehaus & Associates, 1987b.

4.2.4 Cumulative Impacts

Cumulative population and housing growth, as a percentage of the SCAG-82 growth forecast is presented in Table 4.2-2. Population and housing growth of the magnitude under cumulative development is not significant in the context of the growing area housing market. Almost 4,500 new residential units would be developed in the area as part of the Orangecrest Specific Plan by the year 2000. Additional residential development is also planned on March AFB, including 682 new units that would replace 582 existing units in Arnold Heights, and 942 new units as part of the planned Air Force Village West retirement community. When considered cumulatively with these projects, housing growth associated with Scenarios I, II, and III represent between 12 and 14 percent of the SCAG-82 growth forecast between 1985 and 2000 in the Riverside RSA. This cumulative housing growth represents between 36 and 41 percent of the SCAG-82 growth forecast in the Riverside A portion of the Riverside RSA. Thus, cumulative housing growth, including project-related growth, is within the growth parameters identified by SCAG.

4.2.5 Impacts of the Alternatives

The use of traditional military funding to construct the replacement facilities would essentially preclude the development of the 845-acre parcel at the present time. This alternative would thereby eliminate the effects of the development of the 845-acre parcel. The impacts of this alternative are not considered significant.

If no action is taken (i.e., the military continues to use the facilities on the 845-acre parcel and maintains title to that property), no significant impacts on growth and housing would occur.

4.2.6 Mitigations

No significant impacts to housing in the region are identified, therefore no mitigations would be necessary if the proposed action is implemented.

4.3 PUBLIC SERVICES AND FINANCE

4.3.1 Methodology

Impacts on public services and finance would result primarily from population growth and associated housing development. Estimates of additional households and population were applied to revenues and expenditures to estimate requirements and costs for services and additional revenues associated with the development.

The fiscal analysis of conveyance and subsequent development of the 845-acre parcel was conducted for the three development scenarios described in Section 2.1, Proposed Action. Direct effects of development under any of the scenarios include the expected increases in property tax revenue available to potentially affected local jurisdictions. Under each scenario, estimates of the increased assessed value within each jurisdiction were based upon the valuations of similar developments in the immediate area. Examination of property valuations associated with the Orangecrest development provided estimates of expected valuations associated with development of the subject property. Discussions with appropriate local officials provided additional information on expected valuations. Property tax revenue increases were calculated from the estimated increases in assessed values, utilizing likely property tax rates applicable to the parcel. Sales tax revenues associated with the development were assumed to be generated from new population and from purchases of construction materials. Highway user subventions from the state were estimated from new population.

Development of the 845-acre parcel would also be expected to generate increased demand for services provided by local jurisdictions and, consequently, increase expenditures by these jurisdictions. These increased requirements and costs were estimated on a per capita basis for law enforcement, fire protection, water, and sewer services. Highway maintenance cost requirements were estimated on a road-mileage basis. School operations were estimated on a cost-per-pupil basis.

4.3.2 Significance Criteria

The significance of impacts to local service providers was determined by comparing the project-related demands of each development scenario to presently available and projected capacities to provide each service. Impacts were deemed significant if expenditure burdens were placed on a jurisdiction without corresponding increases in revenues.

4.3.3 Impacts of the Proposed Action

4.3.3.1 New Facilities

March AFB Civil Engineering officials indicate that on-base capacity for water, sewer, electric power, and natural gas utilities are adequate to meet the requirements for construction and operation of the three replacement facilities. The services in place on the Main Base are adequate to provide additional demand for police, fire protection, and solid waste removal services required by the three

facilities. These services are not expected to experience any overall increase in demand since the replacement facilities would require about the same level of service as the existing facilities.

4.3.3.2 Land Conveyance

County of Riverside - Revenues

The principal direct revenue effect of conveyance of the 845-acre parcel to private ownership is the additional property tax revenue expected to accrue to the affected local governments. For the residential housing components of the development scenarios an average cost of \$60,000 per multi-family unit and \$100,000 for single-family units are assumed. Support uses (park land, schools, streets, as examples) are assumed not to contribute to the tax base as this acreage would be reconveyed to the appropriate public entities charged with administering this property. The commercial and industrial valuations per acre are estimated based upon an average valuation per square foot from a sample of 1985 commercial and industrial development permit applications in the local area (approximately 20 applications) and an estimate of the number of square feet per acre for the average commercial or industrial development.

The additional property tax collections expected to accrue to the County and City of Riverside under the three development scenarios and under a no development scenario, which assumes the land would remain vacant, are presented in Table 4.3-1. There are two components of Riverside County property taxes, a county-wide \$1.00 per \$100 of assessed valuation for general purposes and \$0.04908 per \$100 of assessed valuation for debt purposes in the tax rate areas that include the conveyance property. The debt rate is for bonded debt incurred prior to Proposition 13 in 1978. County level property tax collections are estimated to be the greatest under Scenario III with an estimated \$3,176,000 in additional property tax revenues. Approximately \$2,576,700 would be expected under Scenario I and \$3,117,400 would be expected under Scenario II. About \$85,000 in property tax revenues would be generated if the property were conveyed but not developed.

Taxable sales in Riverside County amounted to approximately \$5.95 billion in 1986 representing approximately \$6,725 per capita (using the January 1987 population estimate of 886,200). An analysis of growth in population and leakage in taxable sales was conducted on Riverside, San Bernardino, Los Angeles, and Orange counties. It was concluded that per capita taxable sales was a reasonable basis for estimating sales tax revenues in Riverside, San Bernardino, and Orange counties. Based upon estimated population levels under each development scenario, taxable sales attributable to the development would range from approximately \$53 million under Scenario I to \$71 million under Scenario II. At a rate of 1.25 percent, additional sales tax revenues attributable to new population would accrue to municipalities and the County ranging from \$665,775 to \$899,469 under the three scenarios (Table 4.3-2).

The other component of sales and use tax revenues is a one-time infusion of revenues to state and local jurisdictions for construction of the development. For all local jurisdictions, the revenues would accrue over a period of several years and

Table 4.3-1
MARKET VALUE AND ESTIMATED PROPERTY TAX REVENUE, SCENARIOS I, II, AND III

	No. of Units	Acres	Value Per Acre	Value Per Unit	Market Value	County Property Taxes	City Share[4]
Scenario I							
Housing	2,400	807		\$100,000	\$240,000,000	\$2,527,400	\$ 67,440
Commercial		10	\$468,000[1]		4,680,000	49,300	1,320
Support Uses		30	NA [2]		-	-	-
Total					\$244,680,000	\$2,576,700	\$ 68,760
Scenario II							
Housing							
Single Family	1,800	590		\$100,000	\$180,000,000	\$1,895,500	\$ 60,580
Multi family	1,700	195		60,000	102,000,000	1,074,100	28,660
Commercial		30	\$468,000[1]		14,040,000	147,800	3,930
Support Uses		30	NA [2]		-	-	-
Total					\$296,040,000	\$3,117,400	\$ 83,170
Scenario III							
Housing							
Single Family	1,700	555		\$100,000	170,000,000	1,790,200	\$ 47,770
Multi Family	1,600	180		60,000	96,000,000	1,011,000	26,980
Commercial		30	468,000		14,040,000	147,900	3,950
Industrial		50	432,000[3]		21,600,000	227,500	6,070
Support Uses		30	NA [2]		-	-	-
Total					\$301,640,000	\$3,176,600	\$ 84,770
No Development							
Vacant Land		845	10,000		\$ 8,450,000	< \$ 100,000	0

[1] For commercial valuation, assumes 1 acre supports approximately 12,000 square feet of office, retail, and other commercial uses. Value per square foot is approximately \$39 per square foot.

[2] Assumes land is reconveyed to public uses -- schools, parks, streets, as examples, and would not be subject to property taxation.

[3] For industrial valuation, assumes 1 acre supports approximately 16,000 square feet of industrial use. Value is approximately \$27 per square foot.

[4] Based upon FY 1986 City of Riverside's allocations of \$0.02810058 per dollar of assessed value. See Table 4.3-4 below for Elementary and High School District shares of property tax revenues.

Source: Developed from planning data provided by City and County of Riverside, California.

Table 4.3-2
IMPACT POPULATION TAXABLE SALES, AND SALES TAX REVENUES,
SCENARIOS I, II, III

	Scenario I			Scenario II			Scenario III		
	Single Family	Single Family	Multi Family	Single Family	Multi Family	Total	Single Family	Multi Family	Total
Housing	2,400	1,800	1,700	-	-	-	1,700	1,600	-
Person Per Household	3.3	3.3	2.8	-	-	-	3.3	2.8	-
Population Impact	7,920	5,940	4,760	10,700	10,700	10,090	5,610	4,480	10,090
Taxable Sales Per Capita	\$6,725			\$6,725		\$6,725			\$6,725
Taxable Sales	\$53,262,000			\$71,957,500		\$67,855,250			\$67,855,250
Sales Tax Revenue	\$665,775			\$899,469		\$848,191			\$848,191

Notes: Taxable sales per capita based upon 1986 taxable sales in Riverside County and 1-1-87 estimated population.

Source: California State Board of Equalization, 1987; California State Department of Finance, 1987b.

be based upon the amount of project expenditures for taxable building materials. These expenditures would be taxed by local jurisdictions at a rate of 1.25 percent. Assuming that taxable building materials are 16 percent of total market value, the total of such revenues for local governments would be \$489,360 for Scenario I, \$592,080 for Scenario II, and \$603,280 for Scenario III. The assumption of 16 percent for taxable building materials is based on information obtained from the National Association of Home Builders. As stated previously, 0.25 percent of the 1.25 percent local option sales and use tax is dedicated for spending on transportation purposes. Thus, this portion of additional revenues from the local sales and use tax would accrue to municipal and county jurisdictions for transportation.

For State of California subventions, only motor fuel taxes are considered since they are earmarked for highways. For Riverside County, these revenues in 1986 were \$7,950,208 according to the California State Controller's Office. Using a population figure for January 1987 from the California State Department of Finance of 886,200, this averages to \$8.97 per capita. Using the population impact estimates shown in Table 4.3-2, Scenario I impacts of Riverside County are estimated to be approximately \$71,000. Corresponding estimates for Scenarios II and III are \$95,979 and \$90,507, respectively. Other subventions will not be considered in this analysis; a more detailed fiscal study may be possible at such time that plans for development of the 845-acre parcel are specified.

County of Riverside - Expenditures

The principal expenditures required by the County of Riverside almost immediately upon development of the land conveyance site would be to provision of public safety services (police patrol and response and fire suppression), road maintenance, and utilities.

County level police patrol and response services budgeted for FY 1986-87 were \$20,652,053 or about \$40.04 per capita in the unincorporated area and contract cities, using the state population estimate, or \$49,884 per sworn officer. Using the Table 4.3-2 population estimates for the three development scenarios, immediate sheriff expenditures would be \$317,117 for Scenario I, \$428,428 for Scenario II, and \$404,004 under Scenario III.

For fire protection, the baseline figure of \$440,000 per 2,000 dwelling units or 3.5 million commercial/industrial square feet was applied directly to obtain cost estimates for each development scenario. Scenario II is assumed to have 120,000 square feet of commercial and 2,400 dwelling units. This translates to 2,468.57 dwelling unit equivalents, using the equivalency factor of 1,750 commercial square feet per dwelling unit. Fire department operating costs are thus estimated to increase by \$543,085 under Scenario I. Scenario II is assumed to have 360,000 square feet of commercial and 3,500 dwelling units, or an equivalent of 3,705.71 dwelling units. Fire department operating costs would then increase by \$815,256 under Scenario II. Scenario III is assumed to have 960,000 square feet of commercial and industrial space and 3,300 dwelling units; this would be equivalent to 3,848.57 dwelling units and increased fire department costs of \$846,685.

Annual road maintenance would increase county government costs by about \$28,000 per year, assuming 7 miles of roads would be maintained within the development and an average maintenance cost of approximately \$4,000 per mile per year. These

direct costs would be substantially lower than the revenues expected from local transportation sales tax and highway motor fuel tax subventions.

City of Riverside - Revenues

If the City of Riverside annexes the project, the fiscal impact analyses of property and sales tax revenues are unchanged, except as follows. Twenty percent of local sales tax revenues are distributed among cities and unincorporated areas by population. The City of Riverside obtains \$0.02410058 from the \$1.00 general purpose county property tax and \$0.0040 from the debt component. The sum of these is \$0.02810058 which was used to estimate the additional property tax revenues to the city (see Table 4.3-1). These would be \$68,760 for Scenario I, \$83,170 for Scenario II, and \$84,770 for Scenario III. The city's share of these revenues would be deducted from the county revenues for these sources, except for the \$0.004 debt component.

Motor fuel subventions from the State of California totaled \$2,699,323 in FY 1986 for the City of Riverside. Using the January 1987 population figure of 199,000, the per capita figure is \$13.56. By applying population impact estimates from Table 4.3-2, City of Riverside would receive additional revenue of \$107,395 under Scenario I, \$145,092 under Scenario II, and \$136,820 under Scenario III. Other subventions would have similar impacts. These would not be deducted from Riverside County subventions from the state.

City of Riverside - Expenditures

If annexation of the land conveyance site by the City of Riverside were to occur, public safety services and road maintenance would become the responsibility of the city. The City of Riverside Police Department provides a somewhat higher level of service than the County, as described earlier. The 1987 budget of \$8.165 million for patrol services averages \$41.03 per capita, using the state estimate of 199,000 for January 1987 for Riverside City. By applying this per capita figure to the estimated increases in population under each development scenario, additional expenditures of \$324,958 would be required annually for additional police protection services under Scenario I, \$439,021 for Scenario II, and \$413,993 for Scenario III.

The City of Riverside Fire Department has a 1987 budget of \$9.863 million for fire suppression and emergency assistance services, which is equivalent to \$49.56 per capita. Additional operating expenditures for fire protection services are estimated at \$392,515 for Scenario I, \$530,292 for Scenario II, and \$500,060 for Scenario III.

The estimate of \$28,000 for road maintenance is identical to that for the county. If annexation occurs, the city would have responsibility and incur this cost.

If the land conveyance site is annexed, the city may provide sewage treatment. Currently, a treatment plant is planned which would be provided by the developers of Orangecrest, the nearby development which has already been annexed. It is likely that it would be possible to use this facility. Sewer connection fees of \$2,300 per single-family unit, \$2,000 per multi-family unit, and \$600 per 3,000 square feet of commercial or industrial floor space are required as buy-in fees to the existing city sewer system. It is assumed that at least 4,000 feet of line would be required to tie in with existing lines.

Based upon an average per capita water use of 265 gallons per day per person, additional water demand could range from 2.1 million gallons per day under Scenario I to 2.8 million gallons per day under Scenario II. Capacity of the Western Municipal Water District is 90 million gallons per day. Capacity is essentially fully allocated, but expansion is in progress.

Based upon an average per capita wastewater generation factor of 130 gallons per day per person, additional wastewater flows would range from 1.0 million gallons per day under Scenario I to 1.4 million gallons per day under Scenario II. Capacity of the city's wastewater treatment plant is 29.2 million gallons per day. Sewer service by the City of Riverside is currently at capacity, as it is in several small sewer districts in the vicinity of the conveyance site. Expansion of treatment facilities is planned by the city. As mentioned, expansion of Western Municipal Water District facilities is being studied, also. The developer would have to provide extensions to existing main lines, which would amount to a substantial investment due to the remoteness of the site from existing infrastructure.

Val Verde Elementary School District

The estimated elementary school district enrollment increases are indicated in Table 4.3-3. The three development scenarios are shown in the table using per capita operating expenditures as indicated in the baseline discussion above and assuming that 18 percent of the population are school-aged. Elementary pupils are assumed to constitute 60 percent of the school-aged population and range from 856 for Scenario I to 1,156 for Scenario II. Corresponding annual school district expenditures are estimated at about \$2.398 million to \$3.238 million, respectively. It is expected that this growth would, in part, be offset by additional property tax revenues as indicated in Table 4.3-4. These range from about \$81,000 to \$100,000 per year. As noted in the baseline discussion, the balance would have to be made up by increased state apportionments.

Elementary district enrollment is already rapidly growing, necessitating construction of new schools. Project-related enrollments would require even more additional facilities. Thus, impacts are potentially important due to the existing conditions of overcrowding, the use of temporary classroom facilities, and double sessions, and since the district has difficulty obtaining funds for permanent school facilities.

Perris Union High School District

High school enrollments for each development scenario are indicated in Table 4.3-3. These increases range from 570 students under Scenario I to 770 students under Scenario II. The corresponding expenditure impact on the high school district from these increased enrollments range from about \$2.372 million to \$3.205 million. Increased property tax revenues collected by the district, shown in Table 4.3-4, would range from \$29,000 to \$36,000. As would be the case for the elementary school district, increased state apportionments would be also be required for the high school district.

Table 4.3-3
ELEMENTARY AND HIGH SCHOOL DISTRICT ENROLLMENTS,
AND GENERAL FUND EXPENDITURE IMPACTS

	Population	Elementary Pupils[1]	Elementary Expenditures Per Pupil	Elementary District Expenditures	High School Students[1]	High School Expenditures Per Student	High School District Expenditures
Scenario I	7,920	855	\$2,794	\$2,391,656	570	3,200	\$2,372,340
Scenario II	10,700	1,156	2,801	3,237,956	770	3,200	3,204,740
Scenario III	10,090	1,090	2,801	3,053,090	726	3,200	3,021,612

[1] Assumes 18 percent of household population are school age children; 60 percent are elementary students; and 40 percent are high school students.

Source: California State Controller's Office, unpublished data.

Table 4.3-4
ESTIMATED PROPERTY TAX COLLECTIONS FOR THE
VAL VERDE ELEMENTARY AND PERRIS UNION HIGH
SCHOOL DISTRICTS UNDER SCENARIOS I, II, AND III

	Val Verde <u>Elementary</u>	Perris Union <u>High School</u>
Scenario I	\$ 80,864	\$29,393
Scenario II*	97,838	35,563
Scenario III	99,689	36,236

Source: Based upon market valuations presented in Table 3.2-1 and tax rates of \$0.033049 per \$100 assessed valuation for Val Verde Elementary School District and \$0.012013 per \$100 assessed valuation for the Perris Union High School District. These rates represent the total allocation to the Districts including their shares of the County-wide \$1.00 per \$100 assessed value and the pre-Proposition 13 debt component.

Western Municipal Water District

As stated previously, Western Municipal Water District would provide water and sewer services to the land conveyance site if the site is not annexed prior to development. The district may only provide water services if the site is annexed by the City of Riverside. Additional sewerage treatment capacity is expected to be available at March AFB or from the City of Riverside at Orangecrest. Western is presently conducting a sewerage needs study in the area. Connection fees have not yet been established, however the district has indicated that such fees are as high as \$5,000/unit in neighboring communities.

Regarding water provision, it is assumed that at least 4,000 feet of pipeline would be required and that mitigation fees or hook-up charges of \$1,880-\$3,130 per lot and annexation fees of \$45 per acre would be required by Western. In addition, an estimate of \$50 per linear foot of pipeline extension from Orangecrest would suggest an installation cost of approximately \$200,000 for pipelines.

4.3.4 Cumulative Impacts

The adjacent Orangecrest development which is planned for construction over the next 15 years is expected to have a beneficial impact on the City of Riverside finances (City of Riverside, 1985). Two other projects are currently planned in the vicinity of the land conveyance site. The first of these projects, Air Force Village West, is a planned retirement community of 942 housing units. This project is expected to have a net beneficial fiscal impact on local government finances (Niehaus & Associates, 1987b). The second project is replacement of 582 units of military family housing in Arnold Heights at West March with 682 units located approximately one mile to the southwest of the existing housing complex. This development is not expected to affect local government finances.

When considered cumulatively, the construction of the replacement facilities and conveyance of the 845-acre parcel is not expected to have significant adverse impacts on the city or county governments. The cumulative impact on the local school district finances are potentially significant, due to the situation of increasing enrollments, which is expected to continue during the time period that the land conveyance site would probably be developed.

4.3.5 Impacts of the Alternatives

By constructing the replacement facilities using traditional military funding, the Air Force would not have reason to convey the 845-acre parcel to the private sector which would essentially preclude development of the site at this time. Under this action, local government finances would not be directly affected.

If no action is taken by the Air Force, the existing facilities on the 845-acre parcel would continue to serve as the 15th Air Force Combat Operations Center, NCO Professional Education Center, and 15th Band Center. Development of the 845-acre parcel would also be precluded under this alternative, therefore no direct affect on local government finances would occur.

4.3.6 Mitigations

There are a number of methods available to mitigate potential adverse impacts to local government finances. The first method involves the payment of mitigation fees, which can be set by an oversight government or negotiated directly by the developer with the various service providers. In some instances, an alternative to such fees is developer-provided facilities. The City of Riverside has developed a Specific Plan for the adjacent Orangecrest development which requires developers to provide land for parks, a sewage treatment plant, schools, and a fire station to mitigate potentially adverse fiscal impacts to local jurisdictions.

Typical mitigation, or "developer fees," which may be applicable to the developer of the land conveyance site are indicated in Table 4.3-5. The flood control and school district fees would be applicable regardless of whether or not the City of Riverside annexes the tract. The city, under annexation, would require storm drainage and park fees. However, the city fire department has no set fees and expects that the Orangecrest Fire Station would be able to serve the project. If the tract is not annexed, the county fire department has mitigation fees, as stated previously. The Western Municipal Water District has indicated likely hook-up charges and estimated construction costs for pipeline for water service. The city may provide sewerage treatment if annexation were to proceed and could potentially provide this service without annexation. Otherwise, Western would also provide sewerage services. The connection fees and estimated pipeline costs shown in the table are indicated for both possibilities: annexation or no annexation. There are also traffic mitigation fees for either the City and the County of Riverside, which manage the local road system. These are covered in Section 4.5, Traffic.

Developer-financed construction of one elementary school to serve the development and payment of developer fees to the high school district could be made to mitigate the impact on the two local school districts which would serve the land conveyance site.

Table 4.3-5
DEVELOPER FEES APPLICABLE TO THE LAND CONVEYANCE SITE

Riverside County Flood Control	
Basic fee for Perris Valley Area Drainage Plan	\$5,000/acre
Portion of project site within Mockingbird Canyon Drainage Area	\$500/lot additional
Perris Valley School Districts	
High school district and elementary district combined fee	\$1.50/sq. ft. residential \$.25/sq. ft. commercial/industrial
City of Riverside Public Works Department	
Storm drainage fees (in addition to County Flood Control fees)	\$.02 sq. ft. of legitimate site area.
	\$180/building up to 750 sq. ft. of roof area, plus \$27 for each additional 100 sq. ft. or portion thereof up to 3,000 sq. ft. Over 3,000 sq. ft., \$0.06 per sq. ft.
Sewer connection fee	\$2,300/single family unit \$2,000/multi family unit \$ 600/3,000 sq. ft. commercial/ industrial
Construction of pipeline extensions	\$240,000 (\$60/ft.)
Western Municipal Water District	
Added water facilities charge	\$1,880/lot for 3/4" meters; \$3,130/lot for 1" meters
Annexation to improvement dist. fee	\$45/acre (approximately)
Construction of pipeline extensions	\$200,000 (\$50/ft.)
Added sewer facilities charge	\$5000/dwelling unit
City of Riverside Parks Department	
Residential	\$1,194/single family unit \$655/multi family unit
Commercial and Industrial	.5% of first \$100,000 of construction value + .25% of such valuation over \$100,000
City of Riverside Fire Department	
	\$400/dwelling unit \$0.25/sq.ft. commercial/industrial

4.4 PUBLIC HEALTH AND SAFETY

4.4.1 Methodology

The current known extent of hazardous materials on the property was determined from recent surveys of the site and March AFB records. The potential for environmental contamination was assessed based on the type and amount of each hazardous material found on the site. The consequences of the proposed land conveyance were analyzed in terms of both the proposed action's overall effect on hazardous materials and the potential threat to public health or safety posed by hazardous materials already existing on the site.

In accordance with EPA regulations, the Air Force conducted an inspection of all transformers on March AFB which determined that none on the land conveyance parcel were leaking polychlorinated biphenyls (PCBs) (Lt. John Laviolette, personal communication, Civil Engineer, March AFB, 1987b).

Under the direction of the Hazardous Waste Remedial Action Program (HAZWRAP) of the Oak Ridge National Laboratory (ORNL), surveys of diesel fuel held in underground storage tanks and asbestos-containing material (ACM) in buildings on the land conveyance parcel were completed (Lee Wan & Associates, 1987 and 1988).

A survey team used records search, site interviews, visual investigation, and metal detection to identify nine underground storage tanks (USTs) (eight active and one abandoned) designed to hold diesel fuel. Each tank was sampled for size and condition, and the quality of fuel within each tank was compared with a controlled sample. To determine if any tanks had leaked, soil surrounding each tank was sampled for traces and concentration of fuel oil contamination. Recommendations based on the condition of the tanks and potential for oil contamination were made.

The content and condition of asbestos-containing material (ACM) in ten existing facilities on the land conveyance parcel were determined through bulk sampling of building materials. Potential health and safety hazards associated with the ACM were identified by an asbestos exposure assessment, and results and recommendations were presented.

4.4.2 Significance Criteria

The existence of hazardous materials, on or near the selected facility sites on the Main Base or on the 845-acre conveyance parcel, that poses imminent health and safety risks or has the potential to contaminate the sites' environments is considered significant.

4.4.3 Impacts of the Proposed Action

4.4.3.1 New Facilities

Provided that the new facilities are built to current environmental standards, construction of the three buildings and subsequent relocation of staff personnel

from the 845-acre parcel, where hazardous materials exist, to the Main Base, where hazardous materials do not exist, will result in reduced human exposure to hazardous materials. This represents a long-term beneficial impact of the proposed action.

4.4.3.2 Land Conveyance

The existence of hazardous materials on the land conveyance parcel presents potential threat to public health and safety due to the amount and extent of the materials on the site, and the likelihood that these materials would affect people or contaminate the environment (air, water, or soil).

PCBs

PCBs, complex mixtures of chlorinated hydrocarbons, are oil-like substances normally used as heat sinks and capacitors in transformers. PCBs have been found to display various degrees of toxicity to wild birds, fish, and rodents and laboratory primates. Unlike most other organic chemicals which break down fairly quickly in the environment, PCBs are extremely stable and subject to biomagnification -- the process where small amounts of toxins reach higher levels of concentrations at each stage of the food chain. Although the danger caused by PCBs to humans is unclear, PCBs have been implicated as cancer causing in laboratory animals in experiments conducted by the U.S. Public Health Service (U.S. EPA, 1980; Laws, 1981).

PCBs used in transformers have the potential to contaminate both the host transformers (which may cause casing rot and crumbling) and the environment through leakage of PCBs onto the ground or by explosion releasing PCBs into the air (Richard Steadman, personal communication, County of Santa Barbara Hazardous Materials and Health Care Services, 1987).

There are five clusters of 14 in-service transformers on the land conveyance parcel. The Air Force is implementing a program at March AFB for the systematic removal and appropriate disposal of PCB-contaminated transformers. Since the Air Force inspection of active transformers on the conveyance parcel found no transformers to be leaking and no soil contamination, only the labeling of PCB sources was immediately required.

Diesel Fuel in Underground Storage Tanks

Diesel fuel and other volatile organic compounds that may be found in underground storage tanks pose a threat to public health and safety if they leak and contaminate surrounding soil or groundwater or if they explode under high heat or pressure.

Field observations and laboratory analysis of soils indicate that three of the nine USTs found on the land conveyance parcel have leaked diesel fuel and contaminated surrounding soil: USTs at Buildings 3406, 3417/3418 (abandoned), and 3409. The full extent of this soil contamination caused by these leakages could not be assessed based on this preliminary survey, however contamination of the soil poses a public health risk. Other soil samples collected during the survey indicate that none of the other USTs have leaked.

Investigations of the stored fuel reveal that a highly volatile organic liquid has been added to the diesel fuel in the UST at Building 3409. The vapor from the resulting mixture will combust at a lower temperature (25°C) than the diesel fuel held in the other tanks (43°C-88°C). Although an ignition source (spark) is needed in either case to ignite the vapor or fuel, the lower flash point of this mixture creates a slightly greater threat to public safety than do the contents of the remaining eight tanks (Joe Davis, personal communication, HAZWRAP, ORNL, 1988).

Since all identified tanks are metal and are subject to corrosion, there is a potential for future leakage, resulting in further contamination of soil. Subsurface pipes which deliver fuel oil between the tanks and buildings are also metal and subject to corrosion and potential leakage.

Asbestos

In nonindustrial settings, asbestos is generally found in cement products, acoustical plaster, fireproofing textiles, wallboard, ceiling and floor tiles, and thermal insulation. Since various diseases (including asbestosis, mesothelioma, and cancers of the lung, esophagus, stomach, and colon) have been linked with industrial exposure to airborne asbestos, the extensive use of asbestos products in nonindustrial settings and the potential for environmental contamination have raised concern. The presence of asbestos in a building does not immediately threaten the health of its occupants; as long as asbestos-containing material (ACM) remains in good condition and is not disturbed, exposure is not likely. However, when maintenance, repair, renovation, or removal disturb or damage ACM, asbestos fibers that are released create a health hazard to building occupants (U.S. Environmental Protection Agency, 1985).

A survey describing the status and extent of ACM on the conveyance parcel (Lee Wan & Associates, Inc., 1987) reveals that asbestos occurs in nine of the ten buildings. However the presence of asbestos in most cases (e.g., nonfriable floor tiles and wainscot materials) poses no imminent hazard to health but should be monitored to document its condition. In the isolated remaining cases (e.g., friable pipe insulation), airborne asbestos fibers generated from untreated friable asbestos poses an unnecessary health threat to building occupants.

4.4.4 Cumulative Impacts

The existence of hazardous waste on the conveyance parcel may affect development on neighboring properties, most notably the 153-acre Air Force Village West property immediately east of the site. Sharing a common border with the conveyance parcel, the Air Force Village West property lies within close proximity (yards) of utility poles with PCB-containing transformers and buildings with underground diesel fuel tanks. These materials could have adverse effects on the environment of the Air Force Village West site as a result of a mishap leading to contamination of surrounding soils, groundwater, or air.

The planned removal of these materials by the Air Force prior to conveyance would eliminate associated risks and result in a beneficial impact to the environment of the neighboring sites, particularly the Air Force Village West property.

4.4.5 Impacts of the Alternatives

Under the traditional financing alternative, construction of the replacement facilities and relocation from the 845-acre site would still occur, resulting in reduced human exposure to hazardous materials and a long-term beneficial impact. Complete cleanup of the 845-acre parcel is undetermined if it is not conveyed; if hazardous wastes are not removed from the site, this action could be considered to have a significant adverse impact on public health and safety at neighboring properties.

Under the no action alternative, the facilities would remain on the 845-acre parcel. As long as the existing facilities are not disturbed, asbestos containing materials would not posed a threat to public health and safety. The Air Force would be required to remove the leaking underground storage tanks and associated contaminated soil once funding is available for remedial action under the IRP.

4.4.6 Mitigations

The Air Force intends to remove all hazardous materials from the 845-acre before conveyance and plans to require the developer who is accepting ownership of the property to provide the funding for the cleanup program. This plan, when fully implemented, would constitute full mitigation of potential adverse impacts to public health and safety from hazardous materials on the property and would result in a net beneficial impact. However, until the materials are removed, the following mitigations would reduce impacts caused by their presence.

PCBs

The amount and status of PCBs in transformers at March AFB has been investigated by the Air Force which has a program in progress for the systematic removal and appropriate disposal of PCB-contaminated transformers (U.S. Air Force, 1984a). Completion of the transformer removal program would entirely mitigate potential impacts associated with the presence of PCBs on the property.

Underground Storage Tanks

Based on the UST survey findings and recommendations (Lee Wan & Associates, 1988), all contents of the USTs at Buildings 3406 and 3409 should be removed immediately and disposed of according to local, state, and federal regulations (i.e., shipped to oil recyclers according to Department of Transportation regulations) to prevent further leakage and contamination of soil.

The complete volume of contaminated soil surrounding the leaked tanks (at Buildings 3406, 3417/3418 (abandoned), and 3409) should be determined and removed from the vicinity. Soil should be removed using methods that minimize the production of airborne contamination and meet all appropriate safety and UST regulations.

The contents of the remaining active USTs should be removed and shipped to an oil recycler before the land conveyance occurs. The survey identifies four options for the USTs once all their contents are removed: (a) leave tanks in place with no further action; (b) fill the tanks with water; (c) fill the tanks with an inert

material (e.g., concrete); or (d) remove the tanks for re-use or proper disposal. UST removal for re-use or disposal is the recommended option because it would eliminate UST-related risks for the subsequent developer (e.g., excavation obstacles or responsibility for future disposal of contaminated water).

Asbestos

The presence of asbestos in most cases on the land conveyance parcel (e.g., nonfriable floor tiles and wainscot materials) poses no imminent hazard to health but should be monitored to document its condition. In remaining cases (e.g., friable pipe insulation), specialists could treat the friable ACM by encapsulation or wet removal by glove-bag techniques to minimize health risks (Lee Wan & Associates, 1987). In either case, continued monitoring to update the status and extent of ACM through a management and operations plan could be established as long as ACM remains in the buildings.

If future plans include the demolition of buildings, nonfriable ACM should be wetted and removed in sections (not scraped, sanded, or cut) to minimize generation of airborne asbestos fibers. Deteriorated insulation should be removed using glove-bag techniques and remaining loose material should be collected with a high-efficiency particulate air (HEPA) filtered vacuum.

4.5 TRAFFIC

4.5.1 Methodology

To analyze project-related impacts on traffic, a number of reports which examine the transportation system in the vicinity of the Main Base and West March were consulted. The sources of central interest were the recently conducted traffic analysis for Air Force Village West (J.F. Davidson Associates, Inc., 1987a), which provides traffic forecasts and capacity analyses for the retirement village planned immediately east of the land conveyance parcel; and the supplemental analysis of traffic impacts for the Orangecrest development (J.F. Davidson Associates, Inc., 1987b), which provides similar information for the planned residential development immediately north of the land conveyance tract. Additional sources which were consulted include planning materials for the Orangecrest development (e.g., County of Riverside, 1983), and individuals within the Riverside City and County transportation departments.

The fundamental research strategy employed in assessing project-related impacts on traffic was to compare baseline traffic volumes currently estimated for roads and intersections near the base with anticipated additional traffic volumes resulting from the project. Traffic associated with the construction of new facilities on the Main Base, as well as traffic associated with the development of the 845-acre parcel for all three scenarios, was considered in this evaluation.

For the purpose of examining traffic impacts resulting from the facility construction and land conveyance, a three-step method of analysis was employed. First, anticipated increases in traffic volume due to the project were generated. For the sake of consistency, both with other studies of traffic impacts in the vicinity of the project, and with other sections of the present study, two approaches were taken to this traffic generation problem: employing the trip-generation factors used in previous traffic analyses of the area (Table 4.5-1); and employing the trip-generation factors used elsewhere in this EIS for the analysis of air quality (Table 4.5-2).

The second methodological step in the analysis of project-related traffic impacts was to assign the estimated increases in traffic to links in the local transportation network. The 845-acre land conveyance tract was the primary focus during this step of the analysis because of the volume of traffic anticipated and the nature of its future use. Traffic assignment employed the expected distribution of trips used in the earlier Orangecrest study (County of Riverside, 1983, pp. 80-84). This distribution, which was based upon projected region-wide land-use and travel patterns supplied by the Riverside County Planning staff, assigns 28 percent and 12 percent of the trips north and south of the land conveyance site, respectively, and 27 percent and 33 percent west and east of the tract. Related assumptions were made concerning entry and exit from the tract (with particular reference to Plummer Road and Barton Street).

Finally, the third methodological step in the analysis of traffic impacts assessed anticipated flows through selected intersections by calculating their levels of service (LOS). This approach to the traffic analysis employs the Intersection Capacity Utilization (ICU) method, a means of assessment which treats all intersections as if they had signals, and computes for each intersection of interest a LOS based upon a

Table 4.5-1
TRAFFIC GENERATION FACTORS: TRAFFIC ENGINEERING PARAMETERS

Residential Uses[1]				
<u>Generation Factors (TE/DU)[2]</u>				
Description	Inbound	PM Peak Hour Outbound	Total	24-Hr 2-way
1 Acre Lots (0-1 DU/AC)	0.60	0.50	1.10	13.00
1/2 Acre Lots (1-3 DU/AC)	0.60	0.50	1.10	13.00
10,000 SF Lots (1-3 DU/AC)	0.60	0.50	1.10	13.00
7,200 SF Lots (3-4 DU/AC)	0.50	0.40	0.90	10.80
6,000 SF Lots (5-7 DU/AC)	0.50	0.40	0.90	10.80
4,000 SF Lots (8-10 DU/AC)	0.60	0.20	0.80	8.60
Non-Residential Uses				
<u>Generation Factors[3]</u>				
Commercial:[4]				
50,000 - 100,000 SF	3.86	4.34	8.20	79.10
200,000 - 300,000 SF	2.30	2.50	4.80	49.90
Office [4]	0.36	1.84	2.20	12.30
Industrial [4]	0.40	0.78	1.18	5.46
Schools	0.02	0.08	0.10	1.02
Parks	0.54	0.79	1.33	6.00
Treatment Facility	NOM[5]	NOM	NOM	NOM

[1] The source of residential use factors is cited in County of Riverside, 1983, as traffic generation studies conducted by LL&G in Anaheim Hills, June 1980.

[2] TE/DU: Trip ends per dwelling unit, where a trip end is a one-way vehicular movement either entering or departing the generating land use.

[3] Trip ends per 1,000 square feet (SF), students, or acres (AC).

[4] The source of commercial, office, and industrial use factors is cited in County of Riverside, 1983, as Institute of Transportation Engineers 1979.

[5] NOM: a nominal amount of traffic is generated.

Source: Institute of Transportation Engineers, 1979

Table 4.5-2
TRAFFIC GENERATION FACTORS: AIR QUALITY ANALYSIS PARAMETERS

<u>Description</u>	<u>Generation Factors (Total)</u>
Single Family Housing	10.0/unit
Apartment < 10 DU/AC	6.1/unit
Neighborhood Shopping Center	1,230.0/acre
Industrial Park	56.1/acre
Office	12.1/1000 ft ²

Source: California Air Resources Board, 1987.

volume-to-capacity ratio for key conflicting flows. LOS is a measure of convenience, ranging from "A" (representing free flow, denoted by an ICU less than 0.60) to "F" (representing forced flow, denoted by an ICU in excess of 1.0; see Table 4.5-3).

The previously cited pair of recently completed traffic studies provide evaluations of traffic conditions in the vicinity of the conveyance tract (J.F. Davidson Associates, Inc., 1987a, b). The major arterial roadways that would be impacted by traffic generated as a consequence of developing the 845-acre parcel are Van Buren Boulevard and Trautwein Road. Similarly, intersections along Van Buren Boulevard and Trautwein Road are expected to be those most greatly affected by developing the tract. Following suit, the present study focuses upon the traffic volumes for these and associated links and junctions in evaluating traffic impacts associated with the current project.

4.5.2 Significance Criteria

Two major means were employed to identify transportation impacts: by comparing total anticipated traffic on particular links with the maximum capacities of those links; and by monitoring changes in the LOS. With regard to the former, instances where link capacities are exceeded, as well as instances where links with relatively light traffic before the project approach their respective capacities when project traffic is introduced, are considered significant. With regard to the latter, a change in the LOS from a rating C or above to a rating below C, or a change from D to E, or E to F, is judged a significant impact. Also considered in evaluating the significance of traffic impacts are the concerns of the local planning authorities, in this case the Riverside County Road Commission. If the local transportation planners require traffic mitigations, the impacts are deemed significant. All impacts are evaluated in light of planned developments to the transportation links and intersections which will be affected.

4.5.3 Impacts of the Proposed Action

4.5.3.1 New Facilities

Construction of the replacement facilities on the Main Base can be expected to have adverse, short-term impacts on traffic both in the immediate vicinity of the base, and on the base itself. Workers commuting to the construction sites, equipment transport, and material deliveries would increase the flow of traffic and possibly cause delays. However, given the temporary nature of this activity, the impacts associated with construction of the replacement facilities are not expected to be significant. Moreover, traffic delays during construction could be minimized by scheduling movements of workers, materials, and equipment at non-peak hours.

The replacement of the 15th Air Force Headquarters, NCO Professional Education Center, and Band Center -- all currently located on West March -- with new structures located on the Main Base will likewise redistribute the traffic associated with individuals who use these facilities. As shown in Table 4.5-4, the total number of daily two-way trips associated with the replacement facilities, as estimated by the traffic engineering parameters mentioned earlier, is 949 -- 170 of which occur

Table 4.5-3
INTERSECTION LEVEL OF SERVICE DESCRIPTIONS

<u>Level of Service</u>	<u>Traffic Flow Characteristics</u>	<u>ICU Value</u>
A	Low volumes and high speeds, with speeds not restricted by other vehicles; 'free flow'	0 to 60%
B	Driving speeds beginning to be affected by other vehicles, though operation is still stable; 'rural design'	61 to 70%
C	Driving behavior contingent upon that of vehicles, though overall operation is still stable; 'urban design'	71 to 80%
D	Driving behavior greatly determined by the behavior of other drivers; with frequent waiting through one red cycle at an intersection, this is at the lower limit of tolerance for many drivers; 'maximum urban design'	81 to 90%
E	Near or at capacity, representing the maximum volume of traffic an intersection can accomodate; all drivers wait through at least one signal cycle; 'capacity'	91 to 100%
F	Traffic flow is unstable, characterized by long queues often back through more than one intersection; 'jammed conditions'	Not meaningful

Source: J.F. Davidson Associates, Inc., 1987a.

Table 4.5-4
GENERATED TRIPS RESULTING FROM THE
OPERATION OF REPLACEMENT FACILITIES:
TRAFFIC ENGINEERING PARAMETERS [1]

<u>Facility</u>	<u>PM Peak Hour</u>			<u>24 Hour</u> <u>2-way</u>
	<u>Inbound</u>	<u>Outbound</u>	<u>Total</u>	
15th Air Force Headquarters	19	98	117	652
NCO Professional Education Center	5	28	33	185
15th Air Force Band Center	3	17	20	112
Total	27	133	170	949

[1] Calculated based on trip generation factors shown in Table 4.5-1

during peak hour. Daily estimated two-way trips associated with these facilities based on the air quality parameters are slightly less, at 943 (see Table 4.5-5). This additional traffic entering and leaving the Main Base is expected to be distributed among the intersections of A Avenue and Riverside Drive, Cactus Avenue and Graham Street, Meyer Drive and 6th Street, and Meyer Drive and Riverside Drive. Given the proposed improvements to these and other intersections on the Main Base over the next few years, the projected numbers of additional trips would create an adverse but not significant impact upon traffic at March AFB.

4.5.3.2 Land Conveyance

Construction of residential and commercial structures on the 845-acre land conveyance tract is expected to have adverse, short-term impacts on traffic in the immediate vicinity of West March. As was the case with the Main Base, traffic delays are anticipated -- as a result of increased commuting (workers) to the project area, the delivery of equipment and material, and related activities. The impacts associated with construction on West March can be minimized by scheduling project-related traffic to avoid peak hours as much as possible. This potential to minimize effects on the local transportation system, coupled with their limited duration, suggests that impacts on traffic as a consequence of construction activities on the land conveyance tract should not be significant.

In contrast to the construction phase, the conversion of the 845-acre land conveyance tract to a combined residential-commercial (and possibly light industrial) development is anticipated to generate a large amount of daily traffic. As with any such development, this traffic will be a permanent addition to the transportation system in the region, and impossible to avoid by means of scheduling.

Table 4.5-6 presents estimated traffic volumes associated with developing the 845-acre land conveyance tract according to each of the proposed scenarios, estimated using trip generation factors employed in previous traffic engineering studies of the area. Table 4.5-7, on the other hand, presents traffic volumes for each scenario which were estimated using parameters obtained from the California Air Resources Board (1987) (and employed in the air quality analysis section of the EIS). Although the specific values vary these two tables, the message common to both is the relatively large amount of vehicular trips expected as a result of developing the conveyance tract. By using the previously mentioned directional trends anticipated in area travel, the daily trips generated can in turn be assigned to transportation links in the immediate vicinity of West March -- with emphasis on those roadways expected to experience difficulties (Van Buren Boulevard and Trautwein Road). For purposes of the present investigation, the distribution of project-related vehicles was added to that projected for the area in 1995, in an attempt to be consistent with the most recent Orangecrest traffic study (J.F. Davidson Associates, Inc., 1987b). Assignments were again made for each of the three proposed development scenarios, and for both methods of generating trips (Figures 4.5-1 through 4.5-6).

In assessing the impacts of developing the 845-acre parcel of land on West March, attention is directed first towards comparing the resulting traffic distribution with capacities of the links involved. Using 1995 as a baseline, Table 4.5-8 provides the data necessary to make such a comparison. The general trend is for traffic volumes on links in the vicinity of West March to increase substantially as a consequence of

Table 4.5-5
GENERATED TRIPS RESULTING FROM THE
OPERATION OF REPLACEMENT FACILITIES:
AIR QUALITY ANALYSIS PARAMETERS [1]

<u>Facility</u>	<u>24 Hour</u> <u>2-way</u>
15th Air Force Headquarters	641
NCO Professional Education Center	182
15th Air Force Band Center	110
Total	933

[1] Calculated based on trip generation factors shown in Table 4.5-2

Table 4.5-6
GENERATED TRIPS RESULTING FROM
DEVELOPMENT OF THE LAND CONVEYANCE SITE:
TRAFFIC ENGINEERING PARAMETERS [1]

Generated Vehicular Trip Ends				
<u>Scenario</u>	<u>PM Peak Hour</u>			<u>24 Hour</u>
	<u>Inbound</u>	<u>Outbound</u>	<u>Total</u>	<u>2-way</u>
I: 2,400 Dwelling Units	1,440	1,200	2,640	31,200
10 Acres Commercial	276	300	576	5,988
30 Acres Support Uses	--	--	--	----
Totals	1,716	1,500	3,216	37,188
II: 1,800 Sngl Family Units	900	720	1,620	19,440
1,700 Mult Family Units	1,020	340	1,360	14,620
30 Acres Commercial	828	900	1,728	17,964
30 Acres Support Uses	--	--	--	----
Totals	2,748	1,960	4,708	52,024
III: 1,700 Sngl Family Units	850	680	1,530	18,360
1,600 Mult Family Units	960	320	1,280	13,760
30 Acres Commercial	828	900	1,728	17,964
50 Acres Industrial	320	624	944	4,368
30 Acres Support Uses	--	--	--	----
Totals	2,958	2,524	5,482	54,452

[1] Calculated based upon trip generation factors presented in Table 4.5-1

Table 4.5-7
GENERATED TRIPS RESULTING FROM
DEVELOPMENT OF THE LAND CONVEYANCE SITE:
AIR QUALITY ANALYSIS PARAMETERS [1]

<u>Scenario</u>	Generated Vehicular Trip Ends	
	<u>24 Hour 2-Way</u>	
I: 2,400 Dwelling Units	24,000	
10 Acres Commercial	12,300	
30 Acres Support Uses	----	
Total	36,300	
II: 1,800 Sngl Family Units	18,000	
1,700 Mult Family Units	10,370	
30 Acres Commercial	36,900	
30 Acres Support Uses	----	
Total	65,270	
III: 1,700 Sngl Family Units	17,000	
1,600 Mult Family Units	9,760	
30 Acres Commercial	36,900	
50 Acres Industrial	2,805	
30 Acres Support Uses	----	
Total	66,465	

[1] Calculated based upon trip generation factors presented in Table 4.5-2

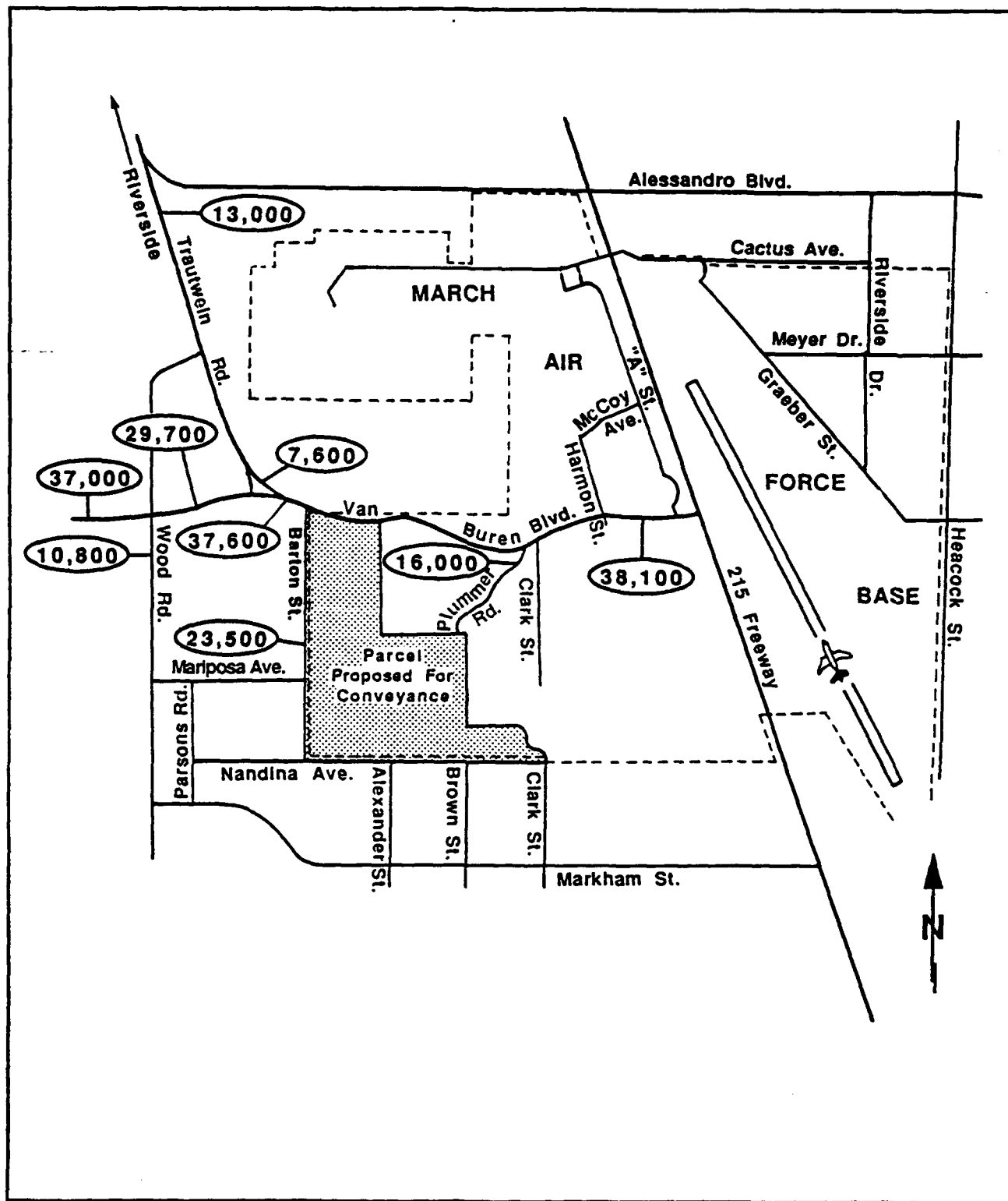


Figure 4.5-1
 1995 BASELINE PLUS PROJECT 24 HOUR TRAFFIC VOLUMES:
 SCENARIO I, TRAFFIC ENGINEERING PARAMETERS

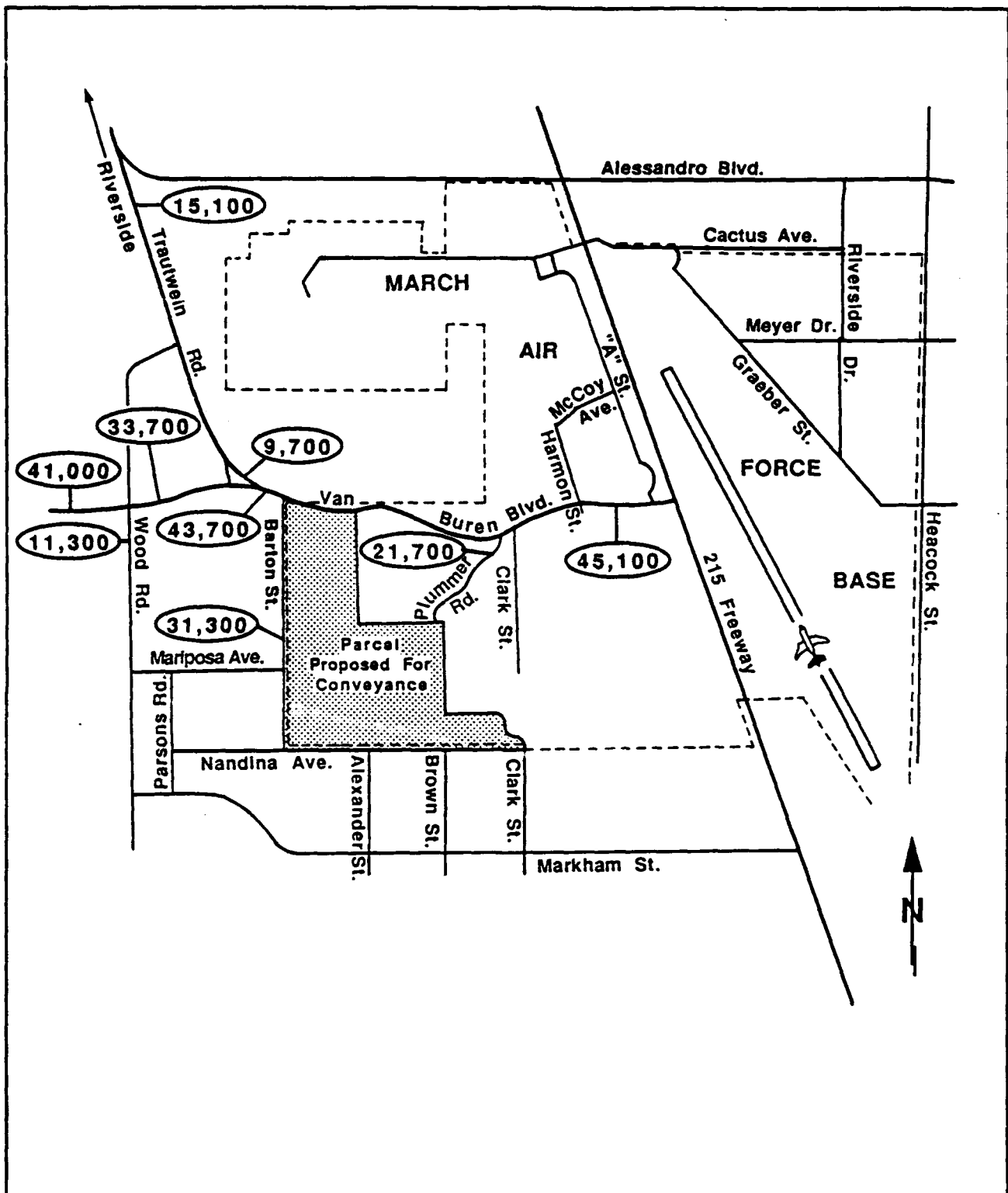


Figure 4.5-2
1995 BASELINE PLUS PROJECT 24 HOUR TRAFFIC VOLUMES:
SCENARIO II, TRAFFIC ENGINEERING PARAMETERS

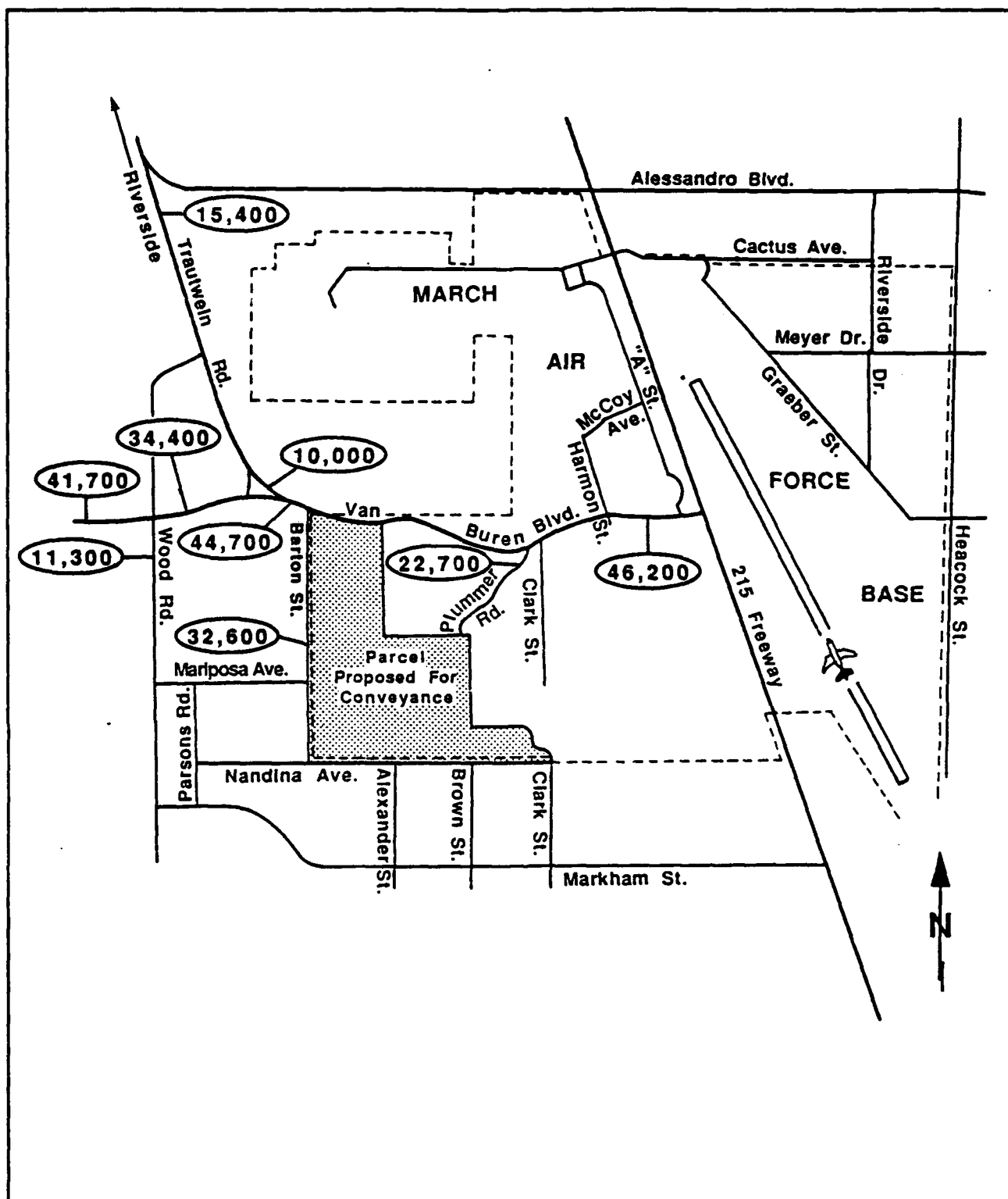


Figure 4.5-3
1995 BASELINE PLUS PROJECT 24 HOUR TRAFFIC VOLUMES:
SCENARIO III, TRAFFIC ENGINEERING PARAMETERS

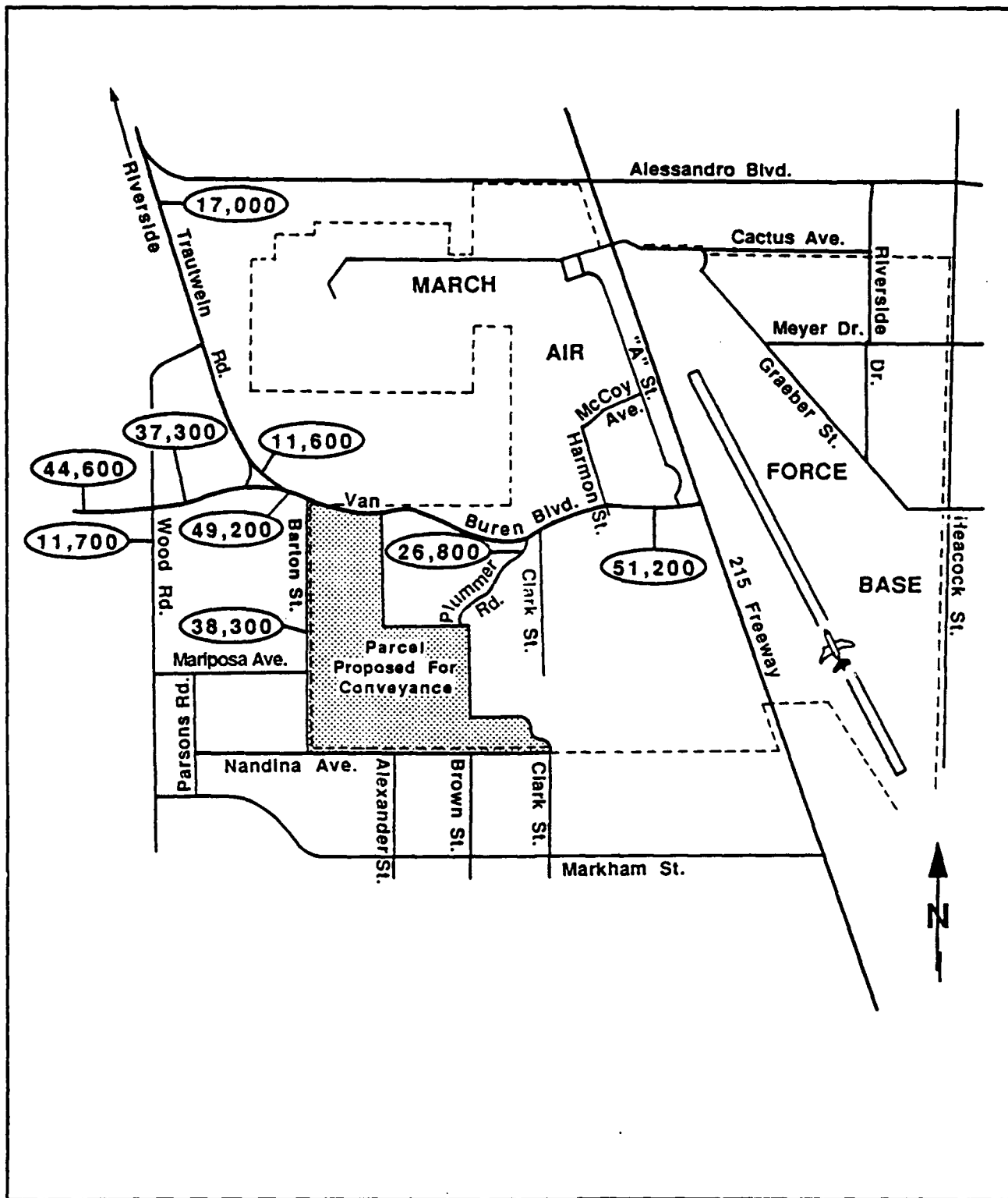


Figure 4.5-5
1995 BASELINE PLUS PROJECT 24 HOUR TRAFFIC VOLUMES:
SCENARIO II, AIR QUALITY ANALYSIS PARAMETERS

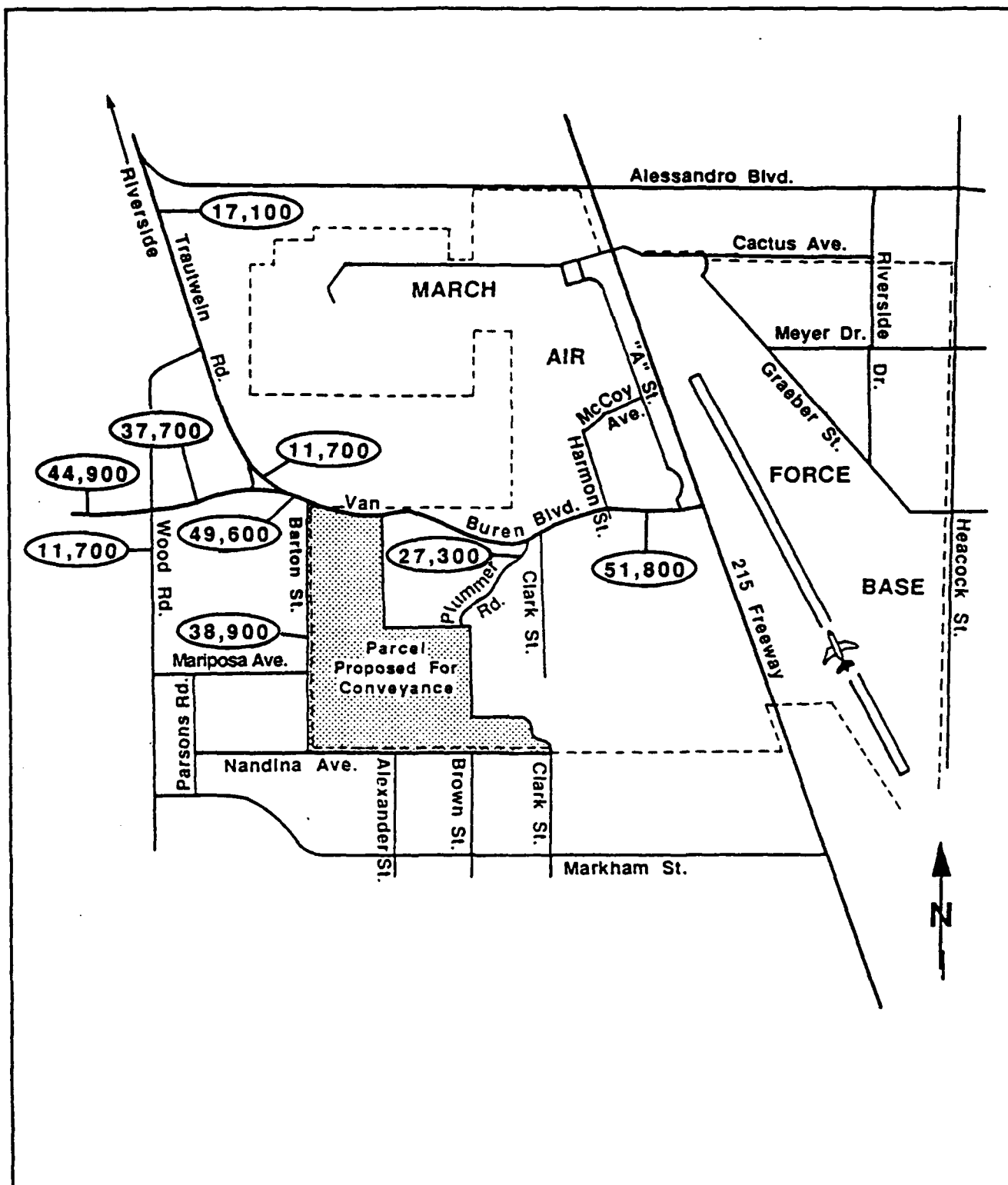


Figure 4.5-6
1995 BASELINE PLUS PROJECT 24 HOUR TRAFFIC VOLUMES:
SCENARIO III, AIR QUALITY ANALYSIS PARAMETERS

Table 4.5-8
PROJECTED DAILY TRAFFIC VOLUMES

Traffic Volumes With Project								
Link	Maximum Capacity[1]	1995 Volumes[1]	First Generation Method			Second Generation Method		
			Scen I Volumes	Scen II Volumes	Scen III Volumes	Scen I Volumes	Scen II Volumes	Scen III Volumes
Van Buren Blvd.								
W/O Wood Rd.	54,000	27,000	37,000	41,000	41,700	36,800	44,600	44,900
E/O Wood Rd.	54,000	19,700	29,700	33,700	34,400	29,500	37,300	37,700
W/O Barton St.	54,000	22,400	37,600	43,700	44,700	37,300	49,200	49,600
E/O Barton St.	54,000	20,600	38,100	45,100	46,200	37,700	51,200	51,800
Trautwein Rd.								
N/O Wood Rd.	32,000	7,800	13,000	15,100	15,400	13,000	17,000	17,100
S/O Wood Rd.	32,000	2,400	7,600	9,700	10,000	7,500	11,600	11,700
Wood Rd.								
S/O Van Buren	32,000	9,700	10,800	11,300	11,300	10,800	11,700	11,700
Barton St.								
S/O Van Buren	30,000[2]	4,000	23,500	31,300	32,600	23,100	38,300	38,900
Plummer Rd.								
S/O Van Buren	30,000[3]	1,700	16,000	21,700	22,700	15,700	26,800	27,300

[1] Source: J.F. Davidson Associates, Inc., 1987b

[2] Assumes improved roadway

[3] Estimated for present study -- assuming improved roadway

the project -- particularly when Scenario III, the mixed residential-commercial-industrial development, is considered. On only one link is capacity exceeded. Barton Street, even if improved from its current state as a small tributary link to accommodate 30,000 vehicles per day, would be substantially burdened in moving traffic to and from the development -- largely due to the anticipated heavy travel to the north and west. Present calculations suggest that the maximum capacity of Barton Street would be exceeded for Scenarios II and III, regardless of the trip generation method employed, resulting in a significant impact. Other capacities, while not exceeded, are approached. Plummer Road, another small tributary which would link the development to Van Buren Boulevard, and subsequently to points east and north (likely, via I-215) of the planned development, would be heavily burdened even if its capacity were expanded to 30,000 vehicles per day. Van Buren Boulevard itself, anticipated to carry the majority of traffic to and from the development area in the current network configuration, similarly would be heavily burdened. In light of these expected increases in traffic volume relative to the maximum link capacities, impacts on both Barton Street and Van Buren Boulevard should be considered significant.

An examination of LOS values for selected intersections in the vicinity of West March supports the above conclusions. Table 4.5-9 summarizes the results of these calculations -- for values resulting from the first method of trip generation (the second approach, also used in air quality analysis, does not provide the peak hour estimates needed for LOS calculations). As might be expected because of the anticipated increases in absolute traffic volume, the most seriously impacted intersections are those with Van Buren Boulevard: the intersection with Wood Road deteriorates from an LOS of B to an LOS of F under all scenarios considered, largely as a result of the increased traffic on Van Buren Boulevard; similarly, the LOS at the intersection with Plummer Road deteriorates dramatically, from an initial value of A to E (Scenario I), and then to F (Scenarios II and III), representing the combined effects of increased traffic on both Van Buren Boulevard and Plummer Road itself. Impacts on both of these intersections should be considered significant. The only other potentially significant impact for the intersections considered occurs under Scenario III for the junction of Van Buren Boulevard with Barton Street -- here deteriorating from a pre-project LOS rating of A to a rating of D.

The above impacts, although significant, should be considered in light of planned improvements in the area's transportation network. Many of these developments, revealed in discussions with staff from Riverside County, Riverside City, and J.F. Davidson Associates, Inc., were suggested in the original Orangecrest EIR (County of Riverside, 1983). Current plans include expanding Trautwein Road from two lanes to four, constructing Orange Terrace Parkway as a four-lane divided arterial, and installing traffic signals at the following key intersections: Orange Terrace Parkway-Trautwein Road, Orange Terrace Parkway-Van Buren Boulevard, and Trautwein Road-Van Buren Boulevard. Of particular interest among these planned improvements is the development of the Orange Terrace Parkway; if connected with the land conveyance parcel (at Krameria, an east-west artery which would serve the parcel, and either Brown or Alexander Streets in the southern portion of the tract), as recommended by County of Riverside planners (County of Riverside, 1987b), this major new artery could siphon off a large amount of traffic presently anticipated to use Van Buren Boulevard by way of Barton Street and Plummer Road. Development of the Cajalco Corridor, another major artery planned for the area south of the

Table 4.5-9
ICU/LOS VALUES EXPECTED AS A RESULT OF DEVELOPING
THE LAND CONVEYANCE TRACT, FOR SELECTED LOCAL INTERSECTIONS [1]

Intersection	1995 ICU/LOS	1995 ICU/LOS With Project		
	W/O Project[2]	Scenario I	Scenario II	Scenario III
Van Buren-Wood	0.65/B	>1.00/F	>1.00/F	>1.00/F
Van Buren-Trautwein	0.63/B	0.66/B	0.72/C	0.77/C
Van Buren-Barton	0.51/A	0.70/B	0.80/C	0.87/D
Wood-Trautwein[3]	0.54/A	0.35/A	0.39/A	0.41/A
Van Buren-Plummer	0.41/A	0.94/E	>1.00/F	>1.00/F

[1] Calculated for first set of trip generation estimates only

[2] Source: J.F. Davidson Associates, Inc., 1987a, 1987b

[3] Planned changes in intersection account for decreasing project ICU/LOS

land conveyance tract, would further serve as alternate access to and from the parcel -- removing even more vehicles presently expected to use Van Buren Boulevard.

4.5.4 Cumulative Impacts

The impacts in traffic associated with constructing and using the three replacement facilities on the Main Base are not expected to be significant. Similarly, because of the relatively small changes in traffic patterns anticipated, and the location of the site slightly east of the other major developments discussed immediately below, cumulative impacts are not expected.

Three other developments are planned in the immediate vicinity of the land conveyance tract: Air Force Village West, east of the tract; the Orangecrest development, to the north; and the proposed military family housing project, immediately northeast of the tract. As has been discussed earlier, the first two of these projects anticipate significant impacts on traffic if developed by themselves. Without making a number of assumptions about these other planned developments and their phasing, it is impossible to calculate precisely the cumulative impacts on traffic. However, it is possible to predict tendencies towards increasing impacts, and to point to those portions of the transportation network in the vicinity of West March most likely to experience such increases. In particular, anticipated impacts on Plummer Road as a consequence of developing Air Force Village West would be increased in conjunction with developing the 845-acre tract. Similarly, the impacts on Van Buren Boulevard as a result of developing Orangecrest would grow due to the development of the 845-acre land conveyance tract and, to a lesser extent, Air Force Village West. The probability of increases to impacts already deemed significant emphasizes the importance of implementing the mitigation measures suggested in the earlier studies, both for improving the local links and intersections, and for better connecting the West March area with the regional transportation network in general.

The third development, consisting of approximately 700 units of military family housing, and possibly an associated small scale retail business, currently is in the preliminary planning stages. However, if it comes to fruition, the significant impacts discovered in the present study, and magnified when considered in conjunction with Air Force Village West and Orangecrest, would be increased even further.

4.5.5 Impacts of the Alternatives

The two alternatives to the proposed action would modify its effects on traffic substantially. In the case of constructing the three desired replacement facilities with appropriated funds, conveyance of the 845-acre tract for anticipated future development would not occur. Such action would effectively remove the significant impacts associated with development of the land conveyance tract, as traffic volumes linked to that parcel would remain at their current low levels. Traffic impacts associated with the construction of the three replacement facilities, in turn, would remain at the non-significant levels considered above under the proposed project scenario.

In the case of the no action alternative, the future effects of both replacement facility construction and development of the land conveyance tract would be removed.

4.5.6 Mitigations

As noted above in the discussion of traffic impacts associated with developing the 845-acre land conveyance tract, a number of significant impacts are anticipated. One set of impacts concerns road capacities. With regard to service to and from the parcel itself, and in lieu of developing other links to connect the parcel to major arterials in the surrounding transportation network -- particularly to the north, east, and west -- Barton Street and Plummer Road will both have to be expanded. A traffic signal and separate left and right turn lanes have been recommended for Plummer Road at its intersection with Van Buren Boulevard, as part of the mitigation for Air Force Village West (J.F. Davidson Associates, Inc., 1987a, p. 19); similar improvements should be considered for Barton Street at its intersection with Van Buren. The other major capacity problems discovered occur along Van Buren Boulevard itself. The reanalysis of traffic impacts associated with the Orangecrest development also encountered volume-related problems on Van Buren Boulevard (J.F. Davidson Associates, Inc., 1987b). The recommendation of that study to expand Van Buren from four to six lanes would alleviate problems of large increases of traffic resulting from development of the 845-acre land conveyance tract. The developer of the land conveyance parcel could contribute to this improvement in some proportional manner.

The second set of significant impacts defined in the present analysis concerns intersections where LOS values decline below acceptable levels. As noted earlier, these problems occur at the intersections of Van Buren Boulevard with Wood Road, Plummer Road, and Barton Street. Similar impacts were noted in the Orangecrest traffic supplemental analysis (J.F. Davidson Associates, Inc., 1987b, p. 8). That study noted that increasing Van Buren Boulevard to six lanes would adequately mitigate intersection problems; such mitigations would serve a similar purpose in the present setting. Again, the developer of the conveyance parcel could contribute some proportional amount to this improvement.

It is appropriate to note within this discussion of mitigation measures that due to the plethora of development planned for the area in and around West March, the only realistic manner in which to approach mitigation of anticipated traffic problems is from an expanded, regional approach which considers the consequences and needs of all of these projects. Limited dispersion of traffic has been identified as one of the major problems associated with the network near the 845-acre parcel (County of Riverside, 1987b). The significant impacts identified in the present study can be seen as a consequence of such limited dispersion -- due largely to limited options. Increased access from the land conveyance tract to other points in the region, particularly by way of large volume arteries which can be accessed directly or indirectly from the tract -- notably the Orange Terrace Parkway and the planned Cajalco Corridor -- would play crucial roles in removing large numbers of vehicles from Van Buren Boulevard and associated links.

4.6 AIR QUALITY

4.6.1 Methodology

The air quality impact analysis determined the sources of air pollutant emissions produced by construction of the three replacement facilities and probable development of the 845-acre parcel.

Although this analysis addresses the impacts from this potential development, additional air quality analysis may be required when development of the 845-acres is actually proposed. The SCAQMD suggests that an environmental impact report (EIR) be prepared for housing developments in excess of 300 single-family units or 400 apartment units. The final determination for preparation of an EIR is the responsibility of the lead agency, which would be the County of Riverside or a municipal government if the site is annexed by one of the surrounding cities.

The sources examined during the construction and operation phases at all sites are as follows:

- o Site preparation/construction -- dust from grading operations, exhaust from heavy equipment at the sites, and exhaust from vehicles used for travel to and from the sites;
- o Operation of the completed projects -- exhaust from vehicles used for travel to and from the sites, and stationary source emissions from natural gas and electricity usage.

Emission calculations were made for each of these pollutant sources in accordance with the methodology outlined by SCAQMD for environmental impact analyses. This methodology includes estimating the amount of emissions generated by the above pollutant sources based on the following project input factors:

- o Emissions from natural gas and electricity consumption -- number of single- and multi-family housing units, number of square feet of building space, and number of industrial developments;
- o Emissions from vehicles -- number of vehicle-miles traveled daily.

Various assumptions were made to provide estimates of some of these input factors. Comparisons were made between each of the three scenarios for development of the 845 acres and an adjacent proposed development of 1,514 acres (the Orangecrest Specific Plan). Using input factors based on expected characteristics of the proposed onbase and probable offbase development, emission calculations were made in conjunction with emission factors for the year 2000 identified by SCAQMD in their publication *Air Quality Handbook for Preparing Environmental Impact Reports* (South Coast Air Quality Management District, 1987a). It is assumed that full development on the 845-acre parcel would be completed by this time. Chief among these emission factors are the following:

- o Natural gas emissions -- pounds per million cubic feet of natural gas use: carbon monoxide, 20; nitrogen oxides, 80 (residential use) and 120 (com-

mercial use); sulfur oxides, negligible; particulate, 0.15; reactive organic gases, 5.3;

- o Power plant emissions -- pounds per megawatt-hour of electricity use: carbon monoxide, 0.2; nitrogen oxides, 1.15; sulfur oxides, 0.12; particulate, 0.04; reactive organic gases, 0.01;
- o Vehicle emissions -- grams per mile at 35 miles per hour, in year 2000: carbon monoxide, 4.02; nitrogen oxides, 1.06; particulate, 0.27; reactive organic gases, 0.33.

4.6.2 Significance Criteria

Once total emissions for the year 2000 were calculated, they were compared with suggested significance criteria identified by SCAQMD in their air quality handbook publication. This publication provides eight separate examples of suggested threshold criteria for lead agencies to use in the CEQA-mandated environmental review of proposed projects. Three of the eight suggested criteria are used in the evaluation of the proposed project in lieu of any federally-mandated NEPA threshold criteria. The first of the suggested threshold criteria for determining significance is shown below; a project is determined to have a significant impact on air quality if estimated emissions exceed the following:

Carbon Monoxide	550 lbs./day
Nitrogen Oxides	100 lbs./day
Sulfur Dioxide	150 lbs./day
Particulate	150 lbs./day
Reactive Organic Gases	75 lbs./day

The second suggested significance threshold criterion requires site-specific air quality modeling which was not done for this analysis. The third criterion involves a determination of whether a proposed action is consistent with the Air Quality Management Plan (AQMP) for the SCAG region. Consistency with the AQMP is determined by comparing the projected population growth associated with the proposed project to the local general plan and the population growth projections of the SCAG. A project is considered inconsistent if it exceeds or accounts for a disproportionately large percentage of the SCAG growth projection. A finding of inconsistency with the AQMP would be a significant impact.

The fourth, fifth, sixth, and seventh suggested criteria deal with proposed actions which do not apply to this analysis. The final criterion suggested by SCAQMD places threshold levels on the size of the development; the relevant portions of this list are shown below:

<u>Land Use Category</u>	<u>Threshold Levels</u>
Housing	
Single Family	300 dwelling units
Apartments	400 dwelling units
Any Facility Generating:	2000 trip-ends/day

As stated in the SCAQMD air quality handbook, "these criteria are suggestions only, since the final decision on the significance of air quality impacts lies with the judgement of the lead agency" (p.II-1). For residential development, the County of Riverside, in effect, uses the third of the eight SCAQMD-suggested criteria. All recent residential development has been consistent with the SCAG-82 growth forecast and the County of Riverside does not currently consider residential development as having a significant air quality impact (County of Riverside Planning Department, personal communication, 1987b).

4.6.3 Impacts of the Proposed Action

4.6.3.1 New Facilities

Short-Term Impacts

Two sources of air pollutant emissions would be produced during site preparation and construction for the March AFB replacement facilities. The air pollutants would result from exhaust emissions and dust generated by heavy equipment at each of the three construction sites. These emissions would be greatest during site preparation when heavy earth-moving equipment would be in operation. These impacts would be temporary, and assuming normal construction practices and SCAQMD mitigation suggestions (i.e., properly maintaining and tuning all construction equipment and machinery and using dust preventative measures such as periodic watering) are implemented, these impacts would not be considered significant.

The development of the three replacement facilities would also have a growth-inducing impact. The short-term population impact is expected to be negligible relative to growth in the region. The increase is consistent with the SCAG-82 forecast and the AQMP, and air quality impacts consequently would not be significant.

Long-Term Impacts

The long-term impacts associated with the proposed project include emissions from on-site use of natural gas (for cooking, space and water heating), off-site generation of electric power, and the use of motor vehicles. The air pollution emissions in the year 2000 from the three replacement facilities are estimated in this analysis, however, similar amounts of air pollutants are currently emitted by the existing facilities on the 845-acre parcel, where these facilities are presently located. The replacement facilities would therefore continue to add emissions into the air basin, but from a different location, on the Main Base.

Natural gas consumption is estimated from the average Southern California Gas Company rates for various non-residential uses (see Table 4.6-1). Emissions from the use of natural gas are also presented in Table 4.6-1. The estimated emissions from the on-base replacement facilities would be relatively small; all pollutants generated from the burning of natural gas would be less than one pound per day.

Air pollution emissions would result from the generation of electric power at generating stations located throughout the power generating network. Estimated

Table 4.6-1
ESTIMATED EMISSIONS FROM USE OF NATURAL GAS AND ELECTRICITY
IN REPLACEMENT FACILITIES

<u>Replacement Facilities</u>	<u>Natural Gas Use</u> <u>(cubic feet)</u>	<u>Electricity Use</u> <u>(kwh)</u>
Combat Operations Center	3,485	1,278
NCO Education Center		
Dorm	3,718	519
School	1,232	596
Recreation Facility	618	156
Band Center	868	219
Total	9,921	2,768
<u>Pollutants Generated by</u> <u>Natural Gas Use</u>	<u>Emission</u> <u>Factor²</u> <u>(lbs/MMcf)</u>	<u>Project</u> <u>Emissions</u> <u>(lbs/day)</u>
Carbon Monoxide	20	0.2
Nitrogen Oxides	80/120 ³	1.0
Sulfur Oxides	negligible	negligible
Reactive Organic Gases	5.3	0.1
Particulate	0.15	0.0015
<u>Pollutants Generated by</u> <u>Electricity Use</u>	<u>Emission</u> <u>Factor⁴</u> <u>(lbs/Mwh)</u>	<u>Project</u> <u>Emissions</u> <u>(lbs/day)</u>
Carbon Monoxide	0.2	0.6
Nitrogen Oxides	1.15	3.2
Sulfur Oxides	0.12	3.3
Reactive Organic Gases	0.01	0.03
Particulate	0.04	0.1

¹ Assumes average Southern California Gas Company and Southern California Edison Company consumption rates shown in Appendix F and Appendix H of the Air Quality Handbook for Preparing Environmental Impact Reports, prepared by SCAQMD.

² Emission factors for natural gas burning from Appendix I of the Air Quality Handbook for Preparing Environmental Impact Reports prepared by SCAQMD.

³ Residential consumption is 80 lbs/MMcf, commercial consumption is 120 lbs/MMcf.

⁴ Emission factors for power plants are from Appendix G of the Air Quality Handbook for Preparing Environmental Impact Reports, prepared by SCAQMD.

Estimates by Niehaus & Associates, December, 1987.

electricity use is shown in Table 4.6-1, based on average electrical use by non-residential facilities. The estimated amounts of pollutants that would be emitted by power plants to supply this power to the on-base replacement facilities are also provided in Table 4.6-1.

An estimate of total motor vehicle emissions generated by traffic associated with on-base replacement facilities is shown in Table 4.6-2. The table indicates the amount of air pollutants that would be emitted daily in the year 2000, based on the total number of vehicle-miles generated by the three replacement facilities. The total number of trips generated per day were estimated based on the number of square feet of building space in the facilities (see Section 4.5, Traffic). Total vehicle-miles traveled daily were computed assuming an average trip length of approximately 8.1 miles and an average traveling speed of 35 miles per hour (California Air Resources Board, 1987).

Total estimated emissions into the South Coast Air Basin in the year 2000 from the on-base facilities are presented in Table 4.6-3. All pollutants are estimated to be below the SCAQMD-suggested significance threshold criteria.

The AQMP has determined the total amount of emissions in the South Coast Air Basin that would be allowable to meet federal standards that will be in place by the year 2000. These federal standards are more stringent than those currently in place. The emissions of carbon monoxide associated with the proposed project and probable development of Scenario III represent approximately 0.001 percent of the allowable basin-wide emissions in the year 2000. The percentages of other project-related emissions in comparison with the allowable basin-wide emissions are as follows: nitrogen oxides, 0.0013 percent; sulfur oxides, 0.0004 percent; reactive organic gases, 0.001 percent; and particulate, 0.001 percent.

Consistency with Air Quality Management Plan

The preparation of the AQMP was mandated by the Federal Clean Air Act and is intended to set up a program so that national ambient air quality standards will be met in the South Coast Air Basin at the earliest feasible date. The SCAG-82 growth forecast was used in the AQMP to determine a future baseline for population growth. If a proposed project has a growth-inducing impact that is in excess of the SCAG-82 growth forecast for the Regional Statistical Area (RSA) in which the project is located, or the growth-inducing impact is a large proportion of the SCAG-82 forecast, then the project is inconsistent with the AQMP. Inconsistency with the AQMP would be considered a significant impact. The proposed construction of three replacement facilities on March AFB would have a very small, temporary growth-inducing impact which would be consistent with the SCAG-82 growth forecast, and therefore consistent with the AQMP.

4.6.3.2 Land Conveyance

Short-Term Impacts

Emissions of air pollutants would be produced during site preparation and construction under Scenarios I, II or III on the 845 acres of land that would be conveyed. Impacts would be temporary, and assuming normal construction practices and

Table 4.6-2
ESTIMATED EMISSIONS FROM USE OF MOTOR VEHICLES
BY REPLACEMENT FACILITY PERSONNEL

<u>Replacement Facilities</u>	<u>Building Space (square feet)</u>	<u>Trip Factor[1] (trips/day/sf)</u>	<u>Mileage Factor[2] (miles/trip)</u>	<u>Total (miles/day)</u>
Combat Operations Center	53,000	.0121	8.1	5,195
NCO Education Center	15,019	.0121	8.1	1,472
Band Center	9,100	.0121	8.1	892
Total	77,119	.0121	8.1	7,558

<u>Pollutant</u>	<u>Emission Factor[3] (grams/mile)</u>	<u>Project Emissions (lbs/day)</u>
Carbon Monoxide	2.83	45.8
Nitrogen Oxides	1.12	18.1
Total Organic Gases	0.28	4.5
Reactive Organic Gases	0.25	4.0
Particulates	0.269	4.4

[1] Trip factors from computer model, "Urbemis #2" (California Air Resources Board, 1987).

[2] Mileage factors for replacement facilities are calculated based on an average trip of 8.1 miles between home and work (for personnel working in the facilities), based on information from the computer model, "Urbemis #2" (California Air Resources Board, 1987).

[3] Emission factors for vehicles are from Appendix D of the Air Quality Handbook for Preparing Environmental Impact Reports, prepared by SCAQMD.

Estimates by Niehaus & Associates, December, 1987.

TABLE 4.6-3
TOTAL ESTIMATED EMISSIONS BY REPLACEMENT FACILITIES
(in lbs/day)

<u>Pollutant</u>	<u>Estimated Emissions from Use of:</u>			<u>Total</u>	<u>Allowable Emissions¹</u> <u>(tons/day)</u>	<u>Percent of Allowable Emissions</u>
	<u>Natural Gas</u>	<u>Electricity</u>	<u>Vehicles</u>			
Carbon Monoxide	0.2	1	48	49	2,370	0.0010%
Nitrogen Oxides	1	3	19	23	895	0.0013%
Sulfur Oxides	negligible	3	0	3	460	0.0004%
Particulate	0.001	0.1	5	5	234	0.0010%
Reactive Organic Gases	0.1	0.03	4	4	227	0.0010%

¹ Allowable emissions are defined by the South Coast Air Quality Management District as total basin-wide average annual daily emissions which will meet year 2000 federal air quality standards (South Coast Air Quality Management District, 1982).

Estimates by Niehaus & Associates, December, 1987.

SCAQMD mitigation suggestions (i.e., properly maintaining and tuning all construction equipment and machinery and using dust preventative measures such as periodic watering) are implemented, these impacts would not be considered significant.

The development of the 845-acre parcel would probably occur in several phases over a period of ten years or more (similar to the nearby Orangecrest development, which is planned to be developed over a period of fifteen years or more). The construction of this development would have a growth-inducing impact. The population impact from construction is expected to be negligible relative to growth in the region. The increase is considered consistent with the SCAG-82 forecast and the AQMP, and air quality impacts consequently would not be significant.

Long-Term Impacts

The long-term air pollution impacts associated with the probable development of the conveyance property would also be from emissions from on-site use of natural gas (for cooking, space and water heating), off-site generation of electric power, and the use of motor vehicles.

Natural gas consumption is estimated from the average Southern California Gas Company rates for residential uses (see Table 4.6-4). Estimated electricity consumption is also shown in Table 4.6-4. Emissions from the use of natural gas are presented in Table 4.6-5. Estimated daily emissions of carbon monoxide and nitrogen oxides from the use of natural gas would be 32 and 206 pounds, respectively, for the 845-acre parcel if it is developed under Scenario III. The estimated emissions from natural gas consumption under Scenarios I and II are approximately 34 and 53 percent of the emissions for Scenario III. Scenario III would generate the largest amount of emissions due to the increased amount of natural gas use that is assumed to occur in industrial developments. The estimated amounts of pollutants that would be emitted by power plants to supply electric power to the 845-acre development are also provided in Table 4.6-5.

An estimate of total motor vehicle emissions in the year 2000 generated by traffic associated with the probable development of the 845-acre parcel is shown in Table 4.6-6. The table indicates the amount of air pollutants that would be emitted, based on the total number of daily vehicle-miles. The total number of trips generated per day was estimated in Section 4.6, Traffic. These estimates were based on the trip factors shown in Table 4.6-6. Total vehicle-miles traveled daily were computed assuming an average trip length of approximately 5.8 miles for residents of the probable development (based on average trip lengths and average distributions of trips for shopping, work, and other destinations in the SCAG region), and an average traveling speed of 35 miles per hour (California Air Resources Board, 1987).

Total estimated emissions into the South Coast Air Basin from the three probable development scenarios are presented in Table 4.6-7. The emissions of each pollutant estimated for Scenario 3 exceeds the thresholds specified by the first of the eight significance criteria suggested by SCAQMD. The eighth of the SCAQMD significance threshold criteria also indicates that development of the 845-acre parcel would have potentially significant air quality impacts in terms of the number of single-family and apartment units. The estimated number of trip-ends generated daily from the probable development, would also be above the suggested threshold of significance for facilities generating more than 2,000 trip-ends per day.

Table 4.6-4
ESTIMATED USE OF NATURAL GAS AND ELECTRICITY
BY PROBABLE DEVELOPMENT SCENARIOS OF LAND CONVEYANCE SITE¹

<u>Development Scenarios</u>	<u>Use of Natural Gas (cubic feet)</u>	<u>Use of Electricity (kwh)</u>
Scenario I		
Single Family Housing	525,896	39,985
Multi Family Housing	0	0
Commercial	139,054	70,807
Total	664,950	110,791
Scenario II		
Single Family Housing	394,422	29,988
Multi Family Housing	229,430	28,322
Commercial	417,161	212,420
Total	1,041,013	270,731
Scenario III		
Single Family Housing	372,510	28,322
Multi Family Housing	215,934	26,656
Commercial	417,161	212,420
Industrial	966,444	921,051
Total	1,972,049	1,188,451

¹ Assumes average Southern California Gas Company and Southern California Edison Company consumption rates shown in Appendix F and Appendix H of the Air Quality Handbook for Preparing Environmental Impact Reports, prepared by SCAQMD.

Estimates by Niehaus & Associates, December, 1987.

Table 4.6-5
ESTIMATED EMISSIONS FROM USE OF NATURAL GAS AND ELECTRICITY
BY PROBABLE DEVELOPMENT SCENARIOS OF THE LAND CONVEYANCE SITE

Development Scenario III¹

Pollutants Generated by <u>Use of Natural Gas</u>	Emission Factor ² (lbs/MMcf)	Project Emissions ³ (lbs/day)
Carbon Monoxide	20	39
Nitrogen Oxides	80/120 ⁴	213
Sulfur Oxides	negligible	negligible
Reactive Organic Gases	5.3	11
Particulate	0.15	0.3

Pollutants Generated from <u>Use of Electricity</u>	Emission Factor ⁵ (lbs/Mwh)	Project Emissions (lbs/day)
Carbon Monoxide	0.2	238
Nitrogen Oxides	1.15	1,367
Sulfur Oxides	0.12	1,426
Reactive Organic Gases	0.01	12
Particulate	0.04	48

¹ Estimated emissions for Development Scenario III are shown above; estimated emissions from use of natural gas for Scenarios I and II are approximately 34 and 53 percent of the estimated emissions for Scenario III; estimated emissions from use of electricity for Scenarios I and II are approximately 9 and 23 percent of the estimated emissions for Scenario III.

² Emission factors for natural gas burning from Appendix I of the Air Quality Handbook for Preparing Environmental Impact Reports prepared by SCAQMD.

³ Based on use of natural gas and electricity shown in Table 6.2-4.

⁴ Residential consumption is 80 lbs/MMcf, commercial consumption is 120 lbs/MMcf.

⁵ Emission factors for power plants are from Appendix G of the Air Quality Handbook for Preparing Environmental Impact Reports, prepared by SCAQMD.

Estimates by Niehaus & Associates, December, 1987.

Table 4.6-6
ESTIMATED EMISSIONS FROM USE OF MOTOR VEHICLES
BY PROBABLE DEVELOPMENT SCENARIOS OF THE LAND CONVEYANCE SITE

<u>Development Scenarios</u>	<u>Emission Parameter (units-acres)</u>	<u>Trip Factor¹ (trips/un-ac)</u>	<u>Mileage Factor² (miles/trip)</u>	<u>Total (miles/day)</u>
Scenario I				
Single Family (units)	2,400	10.0	5.759	138,211
Commercial (acres)	10	1,230.0	5.552	68,290
Total				206,501
Scenario II				
Single Family (units)	1,800	10.0	5.759	103,658
Multi Family (units)	1,700	6.1	5.759	59,719
Commercial (acres)	30	1,230.0	5.552	204,869
Total				368,246
Scenario III				
Single Family (units)	1,700	10.0	5.759	97,900
Multi Family (units)	1,600	6.1	5.759	56,206
Commercial (acres)	30	1,230.0	5.552	204,869
Industrial (acres)	50	56.1	6.498	18,227
Total				377,201
Scenario III³				
<u>Pollutant</u>		<u>Emission Factor⁴ (grams/mile)</u>		<u>Project Emissions (lbs/day)</u>
Carbon Monoxide		2.83		2,353
Nitrogen Oxides		1.12		931
Total Organic Gases		0.28		0
Reactive Organic Gases		0.25		208
Particulate		0.269		224

¹ Trip factors from computer model, "Urbemis #2" (California Air Resources Board, 1987).

² Mileage factors for residential units based on an average trip of 8.8 miles between home and work for 27.3 percent of all trips, an average trip of 3.2 miles between home and shopping for 21.2 percent of all trips, and an average of 5.2 miles between home and other destinations for 51.5 percent of all trips; these averages based on information from the computer model, "Urbemis #2" (California Air Resources Board, 1987).

³ Estimated emissions for Scenario III are shown above; estimated emissions for Scenarios I and II are approximately 55 and 98 percent of those calculated for Scenario III.

⁴ Emission factors for vehicles are from Appendix D of the Air Quality Handbook for Preparing Environmental Impact Reports, prepared by SCAQMD.

Estimates by Niehaus & Associates, December, 1987.

Table 4.6-7
TOTAL ESTIMATED EMISSIONS
BY PROBABLE DEVELOPMENT SCENARIOS OF THE LAND CONVEYANCE SITE
(in lbs/day)

Scenario I					Allowable Emissions¹	Percent of Allowable Emissions
Pollutant	Estimated Emissions from Use of:			Total	(tons/day)	
	Natural Gas	Electricity	Vehicles			
Carbon Monoxide	13	22	1,288	1,324	2,370	0.03%
Nitrogen Oxides	59	127	510	696	895	0.04%
Sulfur Oxides	negligible	133	0	133	460	0.01%
Particulate	0.1	4	122	127	234	0.03%
Reactive Organic Gases	4	1	114	118	227	0.03%

Scenario II					Allowable Emissions¹	Percent of Allowable Emissions
Pollutant	Estimated Emissions from Use of:			Total	(tons/day)	
	Natural Gas	Electricity	Vehicles			
Carbon Monoxide	21	54	2,297	2,372	2,370	0.05%
Nitrogen Oxides	100	311	909	1,321	895	0.07%
Sulfur Oxides	negligible	325	0	325	460	0.04%
Particulate	0.2	11	218	229	234	0.05%
Reactive Organic Gases	6	3	203	211	227	0.05%

Scenario III					Allowable Emissions¹	Percent of Allowable Emissions
Pollutant	Estimated Emissions from Use of:			Total	(tons/day)	
	Natural Gas	Electricity	Vehicles			
Carbon Monoxide	39	238	2,353	2,630	2,370	0.06%
Nitrogen Oxides	213	1,367	931	2,511	895	0.14%
Sulfur Oxides	negligible	1,426	0	1,426	460	0.16%
Particulate	0.3	48	224	272	234	0.06%
Reactive Organic Gases	10	12	208	230	227	0.05%

¹ Allowable emissions are defined by the South Coast Air Quality Management District as total basin-wide average annual daily emissions which will meet year 2000 federal air quality standards (South Coast Air Quality Management District, 1982).

Estimates by Niehaus & Associates, December, 1987.

The AQMP has determined the total amount of emissions in the South Coast Air Basin that would be allowable to meet federal standards that will be in place by the year 2000. These standards are more stringent than those currently in place. Table 4.6-7 indicates that the emissions of carbon monoxide associated with the probable development of Scenario 3 represent approximately 0.06 percent of the allowable basin-wide emissions in the year 2000. The percentages of other project-related emissions in comparison with allowable basin-wide emissions are as follows: nitrogen oxides, 0.14 percent; sulfur oxides, 0.16 percent; reactive organic gases, 0.06 percent; and particulate, 0.05 percent.

Consistency with Air Quality Management Plan

The probable development of the 845-acre parcel would have a growth-inducing impact. The long-term population impact, which is shown in Table 4.2-2, is greatest for Scenario II. The increase of 10,700 people represents 6.8 percent of the SCAG-82 growth forecast for the Riverside RSA. This increase is considered consistent with the SCAG-82 forecast and the AQMP. Although three of the SCAQMD-suggested significance thresholds would be exceeded, Riverside County officials historically have used consistency with the AQMP as the overriding criterion for judging significance. The air quality impacts associated with development on the 845-acre parcel consequently would not be considered significant.

4.6.4 Cumulative Impacts

When considered cumulatively with other planned development in the area, including the Orangecrest Specific Plan and new housing on March AFB, air quality impacts would not be significant. Under cumulative development, the increase of as many as 24,000 people represents 15.1 percent of the SCAG-82 growth forecast for the Riverside RSA. This cumulative growth is considered consistent with both SCAG-82 and the AQMP.

4.6.5 Impacts of the Alternatives

Building the replacement facilities using traditional military financing instead of conveying land to the private sector would essentially preclude residential development on the 845-acre parcel at the present time. Estimated air pollution emissions from the three probable development scenarios would not occur if this alternative action is taken. The emissions from the replacement facilities would still be produced.

If no action is taken (i.e., no replacement facilities are constructed and no land conveyance occurs), air emissions, similar to the amounts estimated for the replacement facilities, would continue to be emitted from the existing facilities at their present locations on the 845-acre parcel. The impacts associated with both of these alternatives are of less magnitude than those of the proposed action, assuming development would occur on the 845-acre parcel subsequent to conveyance of the property. The impacts of these alternatives on air quality are not considered significant.

4.6.6 Mitigations

The SCAQMD has rules and regulations to which a new development must adhere. Compliance with these regulations is documented by the lead agency that would carry out the environmental review on a future project. For a proposed development of the 845-acre parcel, the lead agency would be the County of Riverside, or a city government, if the land is annexed by one of the surrounding municipalities.

The SCAQMD also suggests several mitigations, in addition to their rules and regulations, which are designed to reduce air quality impacts for new construction projects in the South Coast Air Basin. The following mitigation measures are applicable to the proposed new construction and operation of facilities on March AFB and/or for the probable development on the 845-acre property to be conveyed to private ownership:

During clearing, grading, earth moving, or excavation:

- o control fugitive dust by periodic watering, or by paving construction roads, or using other dust prevention techniques as outlined in SCAQMD Rule 403;
- o maintain and properly tune all construction equipment engines and machinery.

After clearing, grading, earth moving, or excavation:

- o seed and water exposed earth until vegetation exists;
- o spread soil binders;
- o wet any exposed earth in sufficient amounts to form a crust on the surface which will prevent the wind from scattering dust;
- o street sweeping of public thoroughfares adjacent to the construction project should be implemented if silt is carried onto those roads.

During construction:

- o control fugitive dust by periodic watering of all areas where vehicles operate to keep the soil damp enough so as to prevent dust from leaving the site;
- o wet down soil during the late morning and after work is completed for the day.
- o use low sulfur fuel (0.05 percent by weight) in all construction equipment.
- o phase and schedule construction activities to avoid high ozone days;
- o discontinue construction activities during second stage smog alerts.

During construction and/or operation:

- o provide and coordinate a ridesharing program for employees;**
- o provide and coordinate a ridesharing incentive package including:**
 - financial incentives for ridesharing;**
 - full or partial subsidization of carpooling, or use of public transit;**
 - flexible or modified work hours for ridesharing employees;**
 - allowance for employees to utilize fleet vehicles for ride sharing; assignment of preferential or free parking for vehicles used for ridesharing.**
- o Provision of convenient access to transit stops. Orient project for transit convenience and accessibility.**
- o Provision of easy pedestrian access, maintenance of street lights, curbs, sidewalks and walk lights.**
- o Provision of bus shelters, benches, and bus pockets in the streets.**
- o Provision of bikeways and convenient bicycle storage facilities.**
- o Provisions of traffic flow improvements to ease periodic congestion, including:**
 - adequate off-street parking;**
 - restriction of on-street parking during peak traffic hours;**
 - restriction of left/right turn lanes;**
 - provision for good design of parking facilities and signs;**
 - provisions for grade separation of intersections and travel modes where possible.**
- o Requirement of additional building energy conservation beyond that required by state or local regulation.**
- o Inclusion of solar water and pool heaters in homes.**
- o Provision of energy efficient street lights.**
- o Inclusion of energy costs in costs of government purchases.**
- o Extensive landscaping to shade buildings**
- o Modified work schedules, such as ten-hour work days over a four day period, or eighty hours over two weeks with one week day off every other week.**
- o Encouragement of balanced urban areas with homes close to places of employment and shopping areas.**
- o Higher density development.**
- o Video and audio teleconferencing in the workplace.**

4.7 NOISE

4.7.1 Methodology

The impact analysis considers potential project-generated noise levels, the reduction of noise levels as a function of distance, and the existing uses and noise environments of the receptor areas.

4.7.2 Significance Criteria

The California Office of Noise Control (CONC) has developed guidelines for evaluating land use compatibility with different noise environments (California Office of Planning and Research, 1987). These guidelines categorize community noise exposure levels (CNEL) into normally acceptable, conditionally acceptable, generally unacceptable and clearly unacceptable for various land uses. The March AFB AICUZ report also documents compatibility of land uses in the area surrounding the base airfield (U.S. Air Force, 1984b). These sources stipulate that residential uses should be discouraged and considered normally unacceptable uses in areas with average noise exposure levels greater than 65 dB. For this analysis an impact is considered significant if the CONC and AICUZ guidelines are not met over the long term.

4.7.3 Impacts of the Proposed Action

The major source of noise directly related to the proposed action would be construction noise: noise from construction of the three facilities on March AFB and noise from potential construction on the 845-acre parcel. Construction noise would occur intermittently during development. Table 4.7-1 lists the noise levels typically associated with construction activities that do not require blasting or piledriving.

4.7.3.1 New Facilities

Construction noise associated with the proposed 15th Air Force Headquarters may be obtrusive to those working in the existing Combat Operations Center. Construction would be taking place in close proximity to the Operations Center, which the new building would adjoin. The proposed NCO Professional and Education Center and Band Center are surrounded primarily by vacant land, though a large dormitory for unaccompanied personnel lies just west of the proposed site for the NCO Center. Noise from construction of the NCO Center could become an annoyance to residents of the dormitory. In addition, users of the Commissary and Arts and Crafts Center may experience noise from construction of the Band Center which will be built nearby.

Long-term noise impacts from operation of the new facilities on the Main Base would be negligible.

Table 4.7-1
TYPICAL CONSTRUCTION NOISE LEVELS AT 50 FEET

<u>Construction Phase</u>	<u>Average Noise Level</u> <u>50 Feet</u>
Ground clearing and grading	83 dBA
Excavation	88 dBA
Foundations	81 dBA
Erection	81 dBA
Finishing	88 dBA

Source: County of Santa Barbara, 1984.

4.7.3.2 Land Conveyance

Few homes currently border or are close enough to the 845-acre parcel to be disturbed by construction noise. This may change if development of adjacent lands is completed prior to development of the conveyance site. Currently, semi-rural residences south of Nandina could be affected by construction noise.

Long-term impacts from development of the conveyed 845 acres are expected to be minimal, since the most probable uses of this land (residential, commercial, light industrial) are not substantial generators of noise.

4.7.4 Cumulative Impacts

Noise generated by construction of the three facilities on the Main Base would not be compounded by other development-related noise in the vicinity of March AFB due to the distance separating the sites. On the other hand, noise generated from development of the 845-acre site could affect users of both of the neighboring, yet currently undeveloped, Air Force Village West and military family housing sites. Noise impacts could be compounded by simultaneous construction of these projects.

4.7.5 Impacts of the Alternatives

Under the traditional financing alternative, construction of the three facilities would occur without conveyance and development of the 845-acre parcel. If this were to happen, effects of construction noise would remain the same for the Main Base area, however, all impacts of noise associated with development of the conveyed parcel would be eliminated.

Under the no action alternative, no noise impacts would occur.

4.7.6 Mitigations

Construction impacts may be partially mitigated by limiting construction activities to the hours between 8 am and 6 pm, and by scheduling activities in a manner that minimizes the amount of high noise-emission equipment operating at the same time. Operative mufflers should be applied to all construction equipment, and whenever possible, lower noise emission equipment should be substituted for relatively high noise-emission equipment. In cases where construction would take place in close proximity to sensitive receptors (e.g., the new 15th Air Force Headquarters), noise barriers around the construction site may be necessary.

With these mitigations, the construction impacts of the proposed action are considered insignificant due to their short term, temporary nature.

4.8 GEOLOGY AND TOPOGRAPHY

4.8.1 Methodology

Unlike other environmental consequences created by this project and examined in this report, occurrence of seismic and geologic events should remain unaffected by the relatively small-scale land use improvements proposed. Although some large-scale engineering projects and mineral exploration have been known to increase localized geologic and seismic activity, typical residential and commercial construction activities are not known to have these effects. However, the quality and extent of development creates a change in the environment that may directly determine the severity of impacts of such geologic or seismic events.

The methodology is based on a comprehensive review, analysis, and synthesis of existing baseline geologic and topographic data from the County of Riverside, the State of California Division of Geology and Mines, and March AFB Installation Restoration Program reports and other published sources. Seismic and other geologic hazards that could affect proposed construction and potential development were evaluated.

4.8.2 Significance Criteria

The significance of impacts is assessed based on the likelihood of a hazardous geologic or seismic event occurring during the project lifetime, the sensitivity of the project elements to such an event, and the potential effects to the vicinity. Impacts from geologic or seismic events are considered significant if they result in imminent property damage (moderate or major) or loss of life.

4.8.3 Impacts of the Proposed Action

Groundshaking generated by earthquakes and the resulting secondary effects will have the greatest potential seismic impact on the proposed action. March AFB lies southeast of the Henry J. Mills Filtration Plant Reservoir but, in the event of a failure, does not lie in the dam inundation path. Since no water bodies are contained on the base, the possibility of seiches is nonexistent. The selected replacement facility sites and conveyance parcel lie outside liquefaction hazard zones (areas where soils lose rigidity and "liquefy" when subjected to repeated seismic shocks) identified by the county (County of Riverside, 1986a).

4.8.3.1 New Facilities

The 15th Air Force Headquarters, the NCO Professional Education Center, and the 15th Air Force Band Center are identified by the County of Riverside (1986a) as normal, high risk land uses; this classification includes office buildings, shopping centers, and multi-family residences of greater than 100 units.

The Seismic Safety Element of the County of Riverside Comprehensive General Plan (1986a) considers distance from faults and underlying soil and rock conditions when

assessing groundshaking hazard. According to this Plan Element, the intermediate thickness of underlying alluvium (200-2000 feet) and distance from the San Andreas Fault of the sites selected for the replacement facilities create a groundshaking hazard considered provisionally suitable for normal, high risk land uses (see Figure 4.8-1). Provisional suitability indicates that groundshaking levels are expected to exceed design levels defined in the Uniform Building Code (UBC) by a factor of up to two; UBC designed buildings may suffer moderate damage in these zones.

4.8.3.2 Land Conveyance

The 845-acre parcel proposed for conveyance presents no geologic hazard that cannot be addressed using standard construction procedures, however the presence of rock outcrops and unweathered bedrock in certain areas may constrain the selection of building locations. The three scenarios of potential development (see 4.1 Land Use) are classified by the County of Riverside (1986a) as normal, low risk uses in relation to seismic safety.

Two groundshaking zones cover the site. Since the entire site is underlain by weathered bedrock, the zones are based solely on distance from the San Jacinto fault (see Figure 4.8-1); the northeastern half of the site, closer to the fault, is expected to receive more intense groundshaking than the southwestern half. Both zones, however, are considered generally suitable for normal, low risk uses (single family residences, multi-family residences less than 100 units, small-scale commercial, light industrial). Provided the structures are built to UBC specifications, buildings should sustain no damage to minor damage from groundshaking (County of Riverside, 1986a).

4.8.4 Cumulative Impacts

Human occupation of an area does not, generally, affect intensities or occurrence probabilities of geologic or seismic events; however, the extent of occupation and land use of an area will determine the severity of impacts associated with such catastrophic events.

Although the County of Riverside recognizes the existence of seismic hazards in the vicinity of March AFB, the general plan still endorses economic expansion there. As development in the area increases, so do the potential adverse impacts caused by seismic events. In any seismically active area it must not be overlooked that continued and intensified residential, commercial, and industrial growth attracts more people and development to the area and increases the risk of property damage and loss of life to those developments and people.

4.8.5 Impacts of the Alternatives

Under the traditional financing alternative, construction of the three facilities would occur without conveyance and development of the 845-acre parcel. In this case, groundshaking impacts on the replacement facilities would remain the same, but all geologically-related impacts on development of the conveyance parcel would be eliminated.

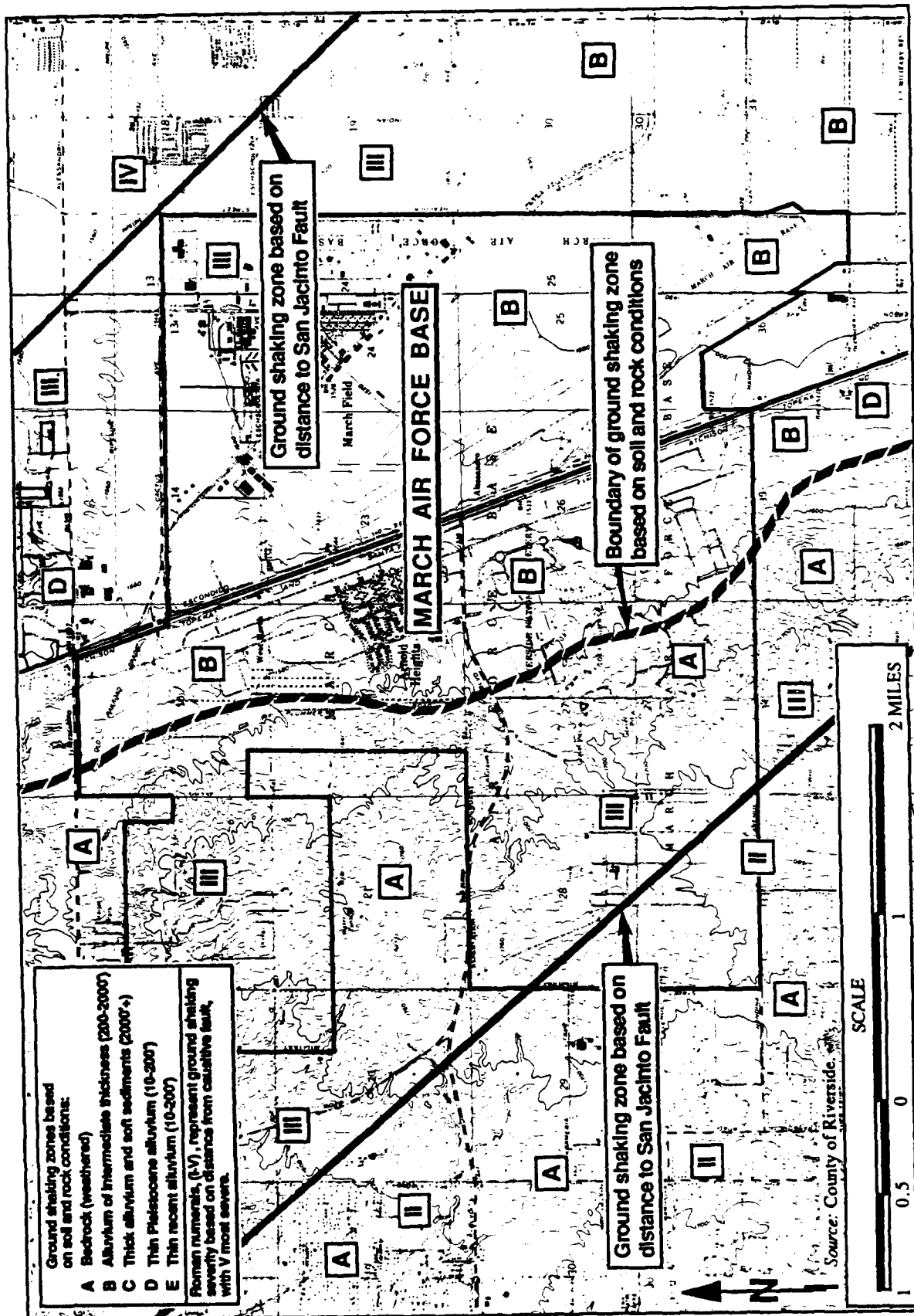


Figure 4.8-1
GROUNDSHAKING ZONES AT MARCH AFB

Under the no action alternative, no introduced geologic or seismic hazards or impacts would occur.

4.8.6 Mitigations

Groundshaking poses the most significant seismic hazard on the Main Base. If the replacement facilities were built to UBC requirements, groundshaking generated by an earthquake could still exceed the structures' groundshaking capacity by a factor of two, and the buildings may sustain moderate damage. To accommodate for this potential adverse impact, the structures could be constructed beyond the UBC requirements to withstand the potential impact and reduce the risk of property damage and loss of life to an insignificant level. At West March, groundshaking poses a reduced threat, and construction of buildings to UBC standards would mitigate impacts of seismic events to an insignificant level.

County policy for development in the area has been to require protection and preservation of existing major rock outcrops. The presence of rock outcrops and unweathered bedrock at certain site locations will constrain the selection of building locations. Although all occurrences of unweathered bedrock cannot be predicted, it is advisable that foundations and utility corridors avoid areas where these occurrences are known and mapped.

4.9 SOILS

4.9.1 Methodology

Soil stability, erosion potential, water retention, and shrink-swell characteristics were analyzed in relation to potential grading activities; the surfacing of the buildings, parking areas, streets, and other structures; and the addition of water to the soil environment due to landscaping and increased runoff.

4.9.2 Significance Criteria

Project-related impacts are considered significant if they could lead to increased soil erosion, degradation of the existing soil conditions, or soil instability which could threaten project operations onsite.

4.9.3 Impacts of the Proposed Action

4.9.3.1 New Facilities

The depth, structure, and texture of the Main Base soils make them suitable for construction purposes. Level relief will minimize need for grading and reduce negative impacts on the soil; however, baring of the soil during construction may lead to soil compaction and increased surface erosion. Shrink-swell properties and depth of hardpan may affect construction on Monserate soils; these characteristics should be known for each site prior to construction so appropriate construction techniques can be applied. No significant soil impacts are expected to occur.

4.9.3.2 Land Conveyance

Soils on the land conveyance parcel are suitable for construction, however, the shrink-swell characteristics of the Monserate soils at possible development sites should be examined prior to construction.

Since the soils are in delicate balance with the rainfall of the area, any action taken that increases runoff may adversely affect soil stability and increase erosion. Actions such as removing vegetation, increasing amounts of water in the soil environment, or redirecting water through or over the soil may exacerbate erosion. Areas with soils on steep slopes and/or having high potential for erosion may experience failure or accelerated erosion if affected directly or indirectly by development -- these soils include Fallbrook soils in drainage gullies and Monserate soils in drainage depressions.

For use as septic tank filter fields, both soil series on the conveyance parcel have severe limitations: the Monserate soils have very slow permeability and the Fallbrook soils are too shallow and are on slopes that are too steep (Soil Conservation Service, 1971).

4.9.4 Cumulative Impacts

4.9.4.1 New Facilities

Completion of the replacement facilities will increase the total paved area of the Main Base. In addition to generating additional surface runoff, this action will combine with existing paved areas to reduce total infiltration into soils which may negatively affect the soil-water budget. However, since the replacement facilities project area is small in comparison to the extant developed area of the Main Base, cumulative impacts on the soils are expected to be negligible.

4.9.4.2 Land Conveyance

With development either underway or planned for Orangecrest, Air Force Village West, and replacement military family housing for Arnold Heights, improvements on the conveyance parcel will complete development for the area surrounding West March.

Each of these projects are starting on undisturbed ground; none, except possible development on the 845-acre conveyance parcel, is expanding on previous development. Therefore, surfacing, grading, and other associated activities likely to decrease infiltration and generate additional runoff may occur and initiate soil degradation and instability on this mostly undeveloped land. As a result, cumulative impacts on the state of the area's soils may be pronounced. Development on steep slopes or on soils vulnerable to erosion may lead to soil instability and increased erosion over the large area.

Accelerated erosion on one site may lead to increased erosion or siltation on neighboring sites. Careless development on one site can effect the soils of neighboring sites by hastening headward gully erosion across property lines or by causing siltation and downstream movement of debris during heavy flow.

4.9.5 Impacts of the Alternatives

Under the traditional financing alternative, construction of the three facilities would occur without conveyance and development of the 845-acre parcel. In this case, impacts on the Main Base soils would remain the same, however, all potential project-related impacts on soils of the conveyance parcel would be eliminated.

Under the no action alternative, no soil impacts would occur.

4.9.6 Mitigations

The soils on the 845-acre site should provide adequate support for possible development structures, but care should be taken not to disturb supporting soils during foundation excavation. Loose or disturbed soils should be replaced with compacted material. Cuts and fills necessary on steeper portions of the site should be protected with adequate slope protection due to the highly erosive nature of the soils. Immediate planting of deep-rooting ground cover, establishment of brow

berms (narrow ledges at the tops of drainages restricting runoff into the drainages), and installation of horizontal drains on high slopes after slope construction would be necessary to mitigate surface erosion of cut and fill slopes to an insignificant level.

The impermeable surfacing of the buildings, parking areas, drives, walkways, and streets predicted by the development scenarios could drastically reduce soil infiltration and increase runoff volume. Since the stability of the soils of the site is presently in a natural balance with the area's low rainfall, this balance could be adversely affected by the addition of runoff from potential development and landscape irrigation, which could lead to increased sheet and gully erosion. Natural drainages, where slopes are steepest and soils are most erosive, should be protected (by lining, subdrains, etc.) to mitigate adverse soil impacts leading to gully erosion to an insignificant level.

4.10 HYDROLOGY, GROUNDWATER, AND WATER QUALITY

4.10.1 Methodology

Drainage characteristics and hydrologic conditions were examined in relation to excess water generated by development on the site; impacts of decreased infiltration rates, increased runoff, and surface and subsurface drainage flow of water were assessed.

4.10.2 Significance Criteria

Conditions related to development of the 845-acre conveyance parcel or construction of the three replacement facilities that may lead to deterioration of natural drainages, large-scale disruption of current drainage patterns, or degradation of water quality are considered significant.

4.10.3 Impacts of the Proposed Action

At both sites, improvements of currently vacant land will alter natural hydrologic processes. Foreseen development calls for pavement of walkways, streets, and parking lots, and construction of buildings with impermeable surfacing. Such development may immediately reduce the area of open ground, clear vegetation, and expose and compact soil. These actions may alter original hydrology by reducing water infiltration into soil and increasing total runoff volumes.

Subsequent landscaping also tends to alter site-specific hydrologic conditions. Replanting of vegetation is encouraged to maintain slope stability and protect exposed soils, however introducing non-native shrubs and grasses with high water demands may require extensive landscaping irrigation. Regular runoff and percolation from such an introduced source may disrupt natural drainage characteristics of an arid area.

Groundwater on the site would not likely be used as a source of water for facilities or development on the project site. No significant impacts to water quality are anticipated.

4.10.3.1 New Facilities

The Main Base lies outside the 100 year flood plain and is protected from offbase runoff by the Perris Valley Storm Drain. An extensive drainage system for the Main Base already exists to accommodate the heavy runoff generated by large paved areas (runways, pavements, buildings); drainage from the selected sites of the replacement facilities would likely be incorporated into this system. Construction of the new facilities may temporarily expose surface soil to compaction which may impede drainage, but completion of the structures, subsequent landscaping, and inclusion into the current drainage network would provide adequate drainage capacities for the sites and reduce associated impacts to an insignificant level.

4.10.3.2 Land Conveyance

The mostly-undeveloped conveyance parcel lies outside the 100-year floodplain and is in minimal danger of flooding. Because the area is located in an arid environment, erosion is the main threat associated with water. In the site's current state of undevelopment, seasonal rainfall percolates into the soil or, during heavy precipitation, runs off through streambeds or depressions. Predicted development of the parcel would alter these drainage patterns by reducing total open space of the parcel. The impermeable surfacing associated with buildings, parking areas, drives, walkways, and streets may reduce the amount of water infiltrating into the soil and, therefore, cause increased overland flow of water. In addition, still more water may be added to the system through irrigated landscaping.

Potential hydrologic impacts result from the interaction of this excess water with natural surfaces and drainage systems. Reduced infiltration may disrupt the soil-water regime resulting in decreased soil water recharge.

Water that would normally have infiltrated into the soil will instead flow over the soil surface and drain into natural watercourses or be directed offsite through improved drainage systems. Directing excess runoff onto exposed soil surfaces or into existing natural drainage systems may upset the natural water balance and lead to a significant adverse impact of increased surface and gully erosion.

4.10.4 Cumulative Impacts

Construction of the new facilities may generate additional surface runoff from pavement and buildings on the Main Base. However, considering the present extent of impermeable surfaces (e.g., roads, sidewalks, buildings, parking lots) on the Main Base, additional runoff generated by the new facilities would be relatively small and could be considered an insignificant impact.

Increased development in the area of the conveyance parcel may result in large-scale decreases in soil infiltration rates and increases in runoff volumes. Reduced infiltration and redirection of generated runoff through improved drainage systems away from the site may decrease soil water storage and, ultimately, reduce groundwater recharge. Although the groundwater is not being used for the development projects, lowering the water table may have an adverse impact on vegetation growth and wildlife habitat of the area.

4.10.5 Impacts of the Alternatives

Under the traditional financing alternative, construction of the replacement facilities and associated insignificant impacts would still occur. Since the 845-acre parcel would not be conveyed, potential hydrologic and groundwater impacts there would be eliminated.

Under the no action alternative, all potential impacts associated with replacement facility construction and parcel conveyance would be eliminated.

4.10.6 Mitigations

The erosion stability of the natural drainage systems of the site are presently in balance with the area's low rainfall. As stated above, this balance could be adversely affected by the addition of runoff from proposed development and landscape irrigation, which would lead to increased gully erosion. To protect natural drainages from increased overland flow, runoff from gutters and streets could be diverted away from natural drainages and be disposed of through storm-drain or other offsite drainage control systems. In addition, brow berms bordering the natural drainages should be constructed, preventing direct runoff into these drainages, to mitigate adverse hydrologic impacts leading to gully erosion to an insignificant level.

4.11 VEGETATION

4.11.1 Methodology

To help determine the impact on vegetation of the proposed action at March AFB, the vegetation map in Figure 3.11-1 was prepared by the combined use of aerial photographs, topographic maps, and an initial systematic field survey of the area. The Main Base and West March sites also were searched systematically for the sensitive species listed in Table 3.11-1; however, none were found. In order to provide a more accurate assessment of the sensitive plant resources at this site, field survey was repeated in the spring, as the flowering periods for these species are from February to June.

4.11.2 Significance Criteria

The environmental consequences of the proposed action on the flora of the site may be assessed in terms of the duration of impact (short or long term), the level of impact (e.g., negligible, low, moderate, or high), and its significance. The factors used in assessing the impact are the following: the total number of acres affected, the types of vegetation found in the area, the abundance of those vegetation forms in the region, the severity of the disturbance, the loss of productivity and habitat, and the recovery potential of the disturbed vegetation.

The assessment of sensitive habitats determines the significance of the impact. A habitat is considered sensitive if: 1) rare, threatened and/or endangered species are recorded on it, 2) there have been no previous disturbances to original native vegetation types in the form of plowing or construction, 3) the rate of recovery of the disturbed habitat and its constituent vegetation is very slow, and 4) the area is important from the point of view of conservation.

4.11.3 Impacts of the Proposed Action

4.11.3.1 New Facilities

Construction of the three new facilities on the Main Base site would eliminate much of the existing vegetation. The plots of land are small, however, and consist mainly of waste fields and ruderal grassland and degraded coastal sage scrub species that are known to recover quickly after disturbance. In addition, most of the area has been disturbed previously by construction and human activities; and since the field survey did not reveal the presence of any of the sensitive species referred to in Table 3.11-1, construction here is not expected to have a significant impact.

4.11.3.2 Land Conveyance

Construction under the three scenarios proposed for the 845-acre parcel of land at West March would eliminate much of the existing vegetation. The affected area is large, but consists of ruderal species that grow back quickly after removal of the original vegetation. In addition, most of the land parcel has been disturbed

previously by dry farming and construction, and it is not known to be important for conservation purposes. Native bunch grasses of California are absent in the area. Moreover, the field survey did not reveal the presence of any sensitive plant resources referred to in Table 3.11-1. Construction on this site, therefore, is not expected to have a significant impact.

Woody riparian habitats are often regarded as sensitive, since tree species take a relatively long time to recover if removed. However, riparian habitats at West March cover a very small area and the condition of the trees is generally poor, possibly due to modified hydrological conditions under upstream management (Michael Brandman Associates, 1987). In addition, riparian scrub habitat and willows (the dominant species) recover rapidly after natural disturbances. For these reasons, their loss would not be significant.

4.11.4 Cumulative Impacts

Although no sensitive habitats or plant resources were found on March AFB, sensitive raptors (golden eagle and black-shouldered kite) forage in the grassland community and the conversion of such habitat may represent an incremental cumulative impact of eventual significance.

4.11.5 Impacts of the Alternatives

The first alternative proposed involves the construction of the new facilities using appropriated funds and would eventually have the same results and impacts on vegetation on the Main Base site as discussed above. However, the land conveyance of the West March site would not come into effect. In this case, the vegetation types on that land would be preserved. Under the no action alternative, there would be no impacts on vegetation at either of the two sites.

4.11.6 Mitigations

An extensive search of both sites during the flowering seasons of the sensitive plants referred to in Table 3.11-1 established the absence of these species on the Main Base and West March areas. If these species were found, their habitats would have to be protected to the extent required by state and local regulations. However, as they have not been located on the project sites, no mitigations for vegetation resources are necessary.

4.12 WILDLIFE

4.12.1 Methodology

The Main Base and West March sites were searched systematically for the sensitive species listed in Table 3.12-1. Since diagnostic sign of the Stephens' kangaroo rat was found, a trapping program was carried out to confirm the presence or absence of the species.

The field work was performed in December 1987 and January 1988 using standard small mammal trapping techniques. Detailed field notes were recorded indicating standard physical and biological elements of the environmental setting. The Stephens' kangaroo rat trapping program was performed under the authority of a Memorandum of Understanding (MOU) from the California Department of Fish and Game permitting Dr. Richard Friesen and Mr. Ty Garrison to handle individuals of Stephens' kangaroo rat for purposes of identification.

Trapping was done with Sherman live traps. The traps were set in areas of Stephens' kangaroo rat habitat where there was good diagnostic sign, as well as areas where the sign was not as clearly diagnostic in an effort to determine the present extent of the range of the Stephens' kangaroo rat population on the site. A standard trapping procedure of a combined 300 trap nights -- 100 traps per night -- was completed on this and adjacent properties (one trap night equals one trap set for one night; on the land conveyance parcel itself, 234 trap nights were conducted).

4.12.2 Significance Criteria

The environmental consequences of the proposed action on the fauna of the site may be assessed in terms of the duration of impact (short- or long-term), the level of impact (e.g., negligible, low, moderate, or high), and its significance. The factors used in assessing the impact are the following: the total number of acres affected, the species found in the area, the abundance of those species in the region, the severity of the disturbance, the loss of productivity and habitat, and the recovery potential of the species.

The assessment of sensitive species determines the significance of the impact. A species is considered sensitive if: (1) rare, threatened or endangered or listed as sensitive by conservation groups or agencies; (2) there have been no previous disturbances to original native species or habitat; (3) the rate of recovery of the disturbed species and its preferred habitat is very slow; and (4) the area is important from the point of view of conservation.

4.12.3 Impacts of the Proposed Action

4.12.3.1 New Facilities

Construction of the three new facilities on the Main Base site would probably eliminate all of the wildlife presently occupying the sites. The sites consist of

urbanized (degraded) habitats and the species known to be present are those which prefer disturbed areas and are not considered sensitive. Construction on these sites would not have a significant impact.

4.12.3.2 Land Conveyance

A total of nine Stephens' kangaroo rats were caught and identified in the trapping program, indicating the presence of a significant but small population occupying 196 acres of habitat on the land conveyance site (Figure 4.12-1).

Construction of either light or heavy urban housing on the site would probably eliminate or displace all of the wildlife currently utilizing the parcel. The population of Stephens' kangaroo rats now occupying the site would be eliminated along with the 196 acres of habitat. Since the Stephens' kangaroo rat is a state-listed threatened species and is proposed for a federal listing as endangered, the elimination of this population and its habitat may be a significant impact.

The elimination or displacement of the other more adaptable or more common wildlife species from the site would not have a significant impact on their species.

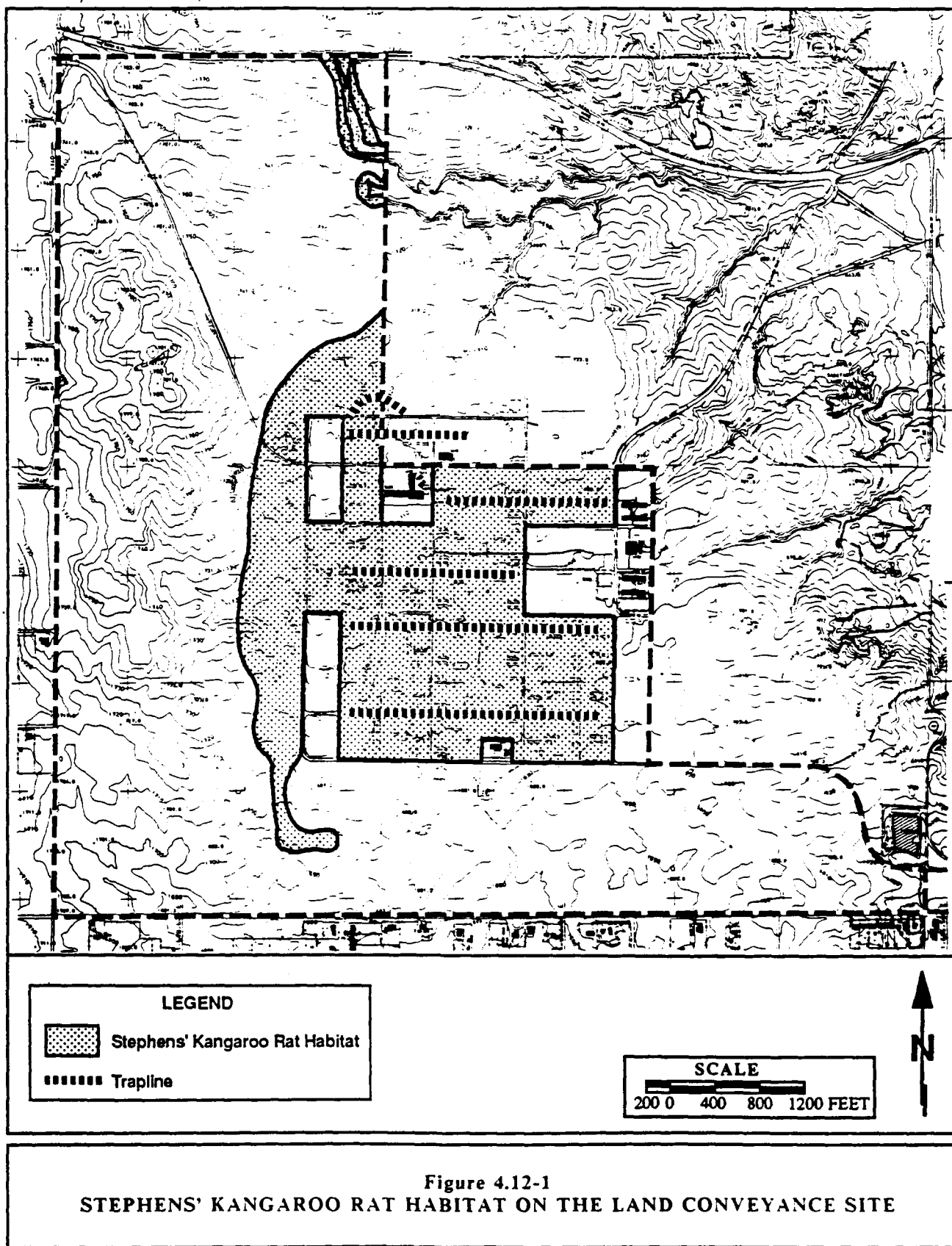
Construction on much of this parcel would result in the loss of suitable foraging habitat for several raptor species, and most or all would no longer utilize the site. A heavily fragmented site would also result in the loss of most such species. Two of the more important species, Ferruginous Hawk and Golden Eagle, require particularly large foraging territories so a substantial reduction in the size of the undeveloped portions of this site would likely result in the reduction or total disappearance from the site of these and other species.

4.12.4 Cumulative Impacts

The development of the Main Base sites would have no significant cumulative impacts on the wildlife species observed there due to the abundance and adaptability of these species.

An unavoidable cumulative impact of the development of the land conveyance property would be the further fractionalizing and increase in distance between populations of Stephens' kangaroo rat within its range and potentially between populations of San Diego coast horned lizards and populations of orange-throated whiptails. There would be little cumulative impact to the other terrestrial vertebrate species currently utilizing the land conveyance parcel.

The 845-acre parcel, in combination with the 108-acre "undesignated area," the 130-acre proposed military family housing site, and Air Force Village West property, as well as the private Orangecrest parcel immediately to the north, form a very large, continuous foraging area. As such, it constitutes an important foraging area for raptor species, including several which are rare and declining, in a region experiencing rapid development. Proposed or approved development on these separate but continuous parcels could produce significant cumulative impacts.



4.12.5 Impacts of the Alternatives

The first alternative proposed involves the construction of the new facilities using appropriated funds and would eventually have the same results and impacts on wildlife on the Main Base sites as discussed above. However, the West March site would not be conveyed to a private party for development. In this case, the wildlife species on that land would be unaltered. Under the no-action alternative, there would be no impacts on wildlife at either of the two sites.

4.12.6 Mitigations

The U.S. Air Force will not disturb Stephens' kangaroo rat populations or habitat prior to conclusion of consultation with the USFWS under the Endangered Species Act. Currently, U.S. Air Force officials are conducting informal consultations with the USFWS regarding the status of the Stephens' kangaroo rat to determine if impacts to this population would be important with respect to long-term species survival. If it is concluded that the species is not jeopardized, development would be allowed to proceed; otherwise, some mitigation measures may be necessary. No direct U.S. Air Force action will be taken to implement mitigations at present since none have yet been stipulated. Federal, state, and local agency mitigations measures in place at the time of construction would need to be addressed by the site developer.

Potential mitigation measures that may allow partial or complete development of the land conveyance project site are currently under evaluation by the Technical Advisory Committee for Stephens' Kangaroo Rat Habitat Preservation -- which includes representatives of federal, state, local, and concerned private agencies. Any interim or long-term mitigations required of the developer would likely be arranged in conjunction with this committee and may be implemented by means of a Memorandum of Understanding (MOU) between the California Department of Fish and Game and the developer.

Possible mitigations include removal of the identified habitat (196 acres) within the boundaries of the project site from the project plan and leaving the area undisturbed; offsite purchase of Stephens' kangaroo rat habitat of equal quality and quantity adjacent to an existing preserve; or establishment of a "Riverside County mitigation fee bank" into which equitable mitigation fees could be deposited for later use toward the purchase of appropriate habitat areas.

The loss of open country foraging habitat for raptors due to extensive development cannot be mitigated. Limited and clustered development near the border of the parcel would reduce the negative impact, although some species, such as Ferruginous Hawk and Golden Eagle, might still abandon the site.

4.13 CULTURAL RESOURCES

4.13.1 Methodology

Two basic steps were followed to evaluate the effects on cultural resources of the proposed action. First, records regarding the cultural resources of the Main Base and West March areas were reviewed, both to determine the resources present, and to help assess their respective importance (U.S. Air Force, 1986b; Archaeological Research Unit, UCR, 1987). Additional sources also were examined -- such as the literature on aboriginal groups that inhabited the area, and records pertaining to Camp Haan -- to help interpret the cultural resources located on the West March parcel. As a second step in evaluating the project-related effects on cultural resources, information acquired during the aforementioned literature review was augmented by visits to the parcels designated for the three proposed replacement facilities and the land conveyance. In particular, several of the archaeological sites located on the latter tract were examined to determine their nature and extent. For the aboriginal remains, several sites were visited and interpretations discussed with an expert on the Cahuilla culture -- both to ascertain their likely archaeological significance, and to determine their significance to local Native Americans (California Native American Heritage Commission, 1988). For the remains of Camp Haan, all surface remains were reexamined, and a systematic photographic record compiled for the affected area. Moreover, individuals either familiar with the history of Camp Haan, or with the extant records of the installation, were consulted to facilitate interpretation of the camp remains encountered (U.S. Air Force, 1987d; U.S. Army Corps of Engineers, 1988; U.S. National Records Center, 1988). Finally, all of the information gathered, along with a photographic record, has been submitted to the California Office of Historical Preservation for review.

4.13.2 Significance Criteria

In evaluating impacts on cultural resources, environmental consequences are deemed significant in two instances: if they adversely affect a site which has yielded, or has the potential to yield, information crucial to an understanding of prehistory or history; or if they adversely affect a site which has some special significance (e.g., sacred status) to a particular Native American group.

4.13.3 Impacts of the Proposed Action

4.13.3.1 New Facilities

As noted earlier in Section 3.13.1, no cultural resources were discovered on the Main Base at the locations designated for the three replacement facilities. No impacts on cultural resources are anticipated at these locations.

4.13.3.2 Land Conveyance

The action of conveying the 845-acre tract on West March to the private sector, and the subsequent development of this tract (under any of the three scenarios), is expected to affect all 21 sites located there. Twenty of these sites are bedrock

mortars. Although the suggestion has been made that these boulders be left undisturbed -- perhaps integrated into the development of the 845-acre parcel, as testimony to the region's cultural heritage (Archaeological Research Unit, UCR, 1987, pp. 8-9) -- the consequences of land conveyance and development are not anticipated to be significant whatever the future of the bedrock mortars. Such sites occur throughout southern California, with no less than 14 located within one mile of the project area (Archaeological Research Unit, UCR, 1987, p. 2). More important than their prevalence, bedrock mortars provide limited information on the past, since neither their ages nor their specific uses (beyond functioning as a base for some type of grinding activity) can be determined. An interpretation of these sites as the remains of short-term visits to process plant food, by small groups whose villages were probably in the more ecologically complex foothills far to the east of the project area, is consistent with the anthropological literature on the area (Bean, 1972, p. 75; Bean, 1978, pp. 575-578; Moratto, 1984, p. 75). As a consequence of the above reasons, further study of such mortar sites will provide little additional insight to the prehistory of the region. Furthermore, it is the opinion of an individual who is both a member of the Cahuilla and the California Native American Heritage Commission that none of the bedrock mortar sites have any special significance to local Native Americans (California Native American Heritage Commission, 1988; see Appendix D).

Due to their nature and extent, the remains of Camp Haan will almost certainly be removed when the 845-acre tract is developed following land conveyance. Although this site is associated with an important period in the history of the United States, its removal from the study area is not expected to have a significant impact on cultural resources. Even though a number of structures were located on the section concerned, these remains comprise only a fraction of the total camp -- much of which has been destroyed during the construction of the Arnold Heights military family housing development, the Veterans Administration National Cemetery, and the Lt. General Old Golf Course (Noel, n.d.). In addition, because Camp Haan was used for a mere five years, associated deposits will likely be quite scanty; the preservation of its remains for further study would thus provide little information that could not be gleaned more easily, and in greater detail, from written documents. With reference to documentary evidence on Camp Haan, we note in particular the records stored at the U.S. Army Corps of Engineers, Los Angeles District Office, on the land acquisition and disposal of Camp Haan (U.S. Army Corps of Engineers, n.d.); records stored at the Military Field Branch of the National Archives (in Suitland, Maryland), in the form of a two volume Camp Completion Report containing detailed descriptions of the buildings constructed (Lippincott and Bowen, 1941), and documents concerning the operation of Camp Haan during its tenure as a military training and defense installation (U.S. Army, 1941-45); records stored at the Military Reference Branch of the National Archives (in Washington, DC) concerning the use of Camp Haan as a Prisoner of War Camp (Provost Marshall General, 1944, 1945, and 1946); and assorted records (newspaper articles, aerial photographs, government documents, etc.) concerning Camp Haan on file at the Field Museum at March AFB.

4.13.4 Cumulative Impacts

When the land conveyance-facility construction project is considered in conjunction with the two other major government actions planned for West March -- the Air

Force Village West project and the private sector financed military family housing project -- impacts on cultural resources are still not anticipated to be significant. Obvious remains of Camp Haan are absent from the tracts of land associated with the other two projects, removing the potential of any additional impacts where historic remains are concerned. And although five bedrock mortars located on the Air Force Village West tract and eight similar sites found on the proposed military family housing parcel may be damaged or destroyed by the planned actions, the limited information available from such sites, coupled with their lack of significance to local Native American groups, once again limits the impacts of their loss.

4.13.5 Impacts of the Alternatives

Both of the alternatives to the proposed action would further reduce the impacts on associated cultural resources -- impacts already anticipated to be non-significant. The no action alternative would leave the sites found on the 845-acre tract in their present condition. Similarly, the traditionally financed alternative would remove the need to convey ownership of the 845-acre tract to the private sector, and hence any potential impacts on the sites located there.

4.13.6 Mitigations

Because the consequences of both the construction of three replacement facilities and the conveyance of the 845-acre tract of land on West March are not anticipated to have significant effects on cultural resources, no mitigation measures are proposed. If additional cultural resources are encountered during the development of the project area, a qualified archaeologist should be consulted before disturbing the remains further.

5. IRREVERSIBLE COMMITMENT OF RESOURCES

Conveying the 845-acre parcel of land on West March to a private party would constitute an irreversible commitment of government resources. With the exception of defining excluded uses, such as heavy industry or tall buildings, the Air Force will relinquish control over development of the land; and once the parcel is developed, it would be difficult -- if not impossible -- for March AFB to regain use of the property. It must be borne in mind that such an action is a "one-time-only" proposition, and loss of the land would preclude its availability for currently-unforeseen purposes that might arise in the future. Such opportunity costs notwithstanding, it is a fact that the land has, for the most part, not been intensively used since its incorporation into the base. Moreover, the consolidation of facilities on the Main Base is a more efficient and appropriate use of land resources than the current situation.

Delay of the land conveyance to some future time would have uncertain consequences. It is probable that, over time, the land would increase in value at a rate greater than the overall inflation rate, potentially enabling March AFB to realize a greater return for the land at a later date. On the other hand, continued development in the area and possible future constraints or controls on area growth could make it more difficult to develop the land.

6. REFERENCES

- Abrams, L. 1923. *Illustrated Flora of the Pacific States*. Vols. I-IV, Stanford University Press. Stanford, CA.
- Archaeological Research Unit, University of California, Riverside. 1986. *An Archaeological Assessment of the West March Housing Development, March Air Force Base, Riverside, California*. Report prepared for 22nd Civil Engineering, March Air Force Base, by D.F. McCarthy, Archaeological Research Unit, University of California, Riverside.
- Archaeological Research Unit, University of California, Riverside. 1987. *An Archaeological Assessment of 970± Acres of Land Located on March Air Force Base, Riverside, California*. Report prepared for 22nd Civil Engineering, March Air Force Base, by K.K. Swope and B. Neiditch, Archaeological Research Unit, University of California, Riverside.
- Bean, L.J. 1972. *Mukat's People: The Cahuilla Indians of Southern California*. University of California Press, Berkeley.
- Bean, L.J. 1978. Cahuilla. In *Handbook of North American Indians, Volume 8: California*, edited by R.F. Heizer, pp. 575-587. W.C. Sturtevant, general editor. U.S. Government Printing Office, Washington, DC.
- Bean, L.J., and F.C. Shipek. 1978. Luiseno. In *Handbook of North American Indians, Volume 8: California*, edited by R.F. Heizer, pp. 550-559. W.C. Sturtevant, general editor. U.S. Government Printing Office, Washington, DC.
- California Air Resource Board. 1987. *Air Quality Analysis Tools*. Sacramento, CA.
- California Department of Health, Office of Noise Control. 1976. *Guidelines for the Preparation and Content of Noise Elements of the General Plan*. Berkeley, CA.
- California Department of Finance. 1987a. *Population Estimates of California Cities and Counties*. Sacramento, CA.
- California Department of Finance. 1987b. *State and County Population Estimates to July 1986 (Provisional)*. Sacramento, CA.
- California Employment Development Department. 1987. *Annual Planning Information, Riverside-San Bernardino Metropolitan Statistical Area*. Sacramento, CA.
- California Native American Heritage Commission. 1988. Personal communication with Katherine S. Saubel, Commissioner, California Native American Heritage Commission (February), Riverside, CA.
- California Natural Diversity Data Base (CNDDB). 1987. Data Base Record Search for Information on Threatened, Endangered, Rare, or Otherwise Sensitive Species and Communities in the Vicinity of Riverside East and Steele Peak. California Department of Fish and Game, State of California Resources Agency. Sacramento, CA.

- California Office of Planning and Research. 1987. *State of California General Plan Guidelines*. Sacramento, CA.
- California State Board of Equalization. 1987. *Taxable Sales in California*. Sacramento, CA.
- Council on Environmental Quality. 1978. *Regulations for Implementing the Procedural Provisions of the National Environmental Quality Act*. Washington, DC.
- Division of Mines and Geology, State of California. 1965. *Explanatory Data, Santa Ana Sheet, Geologic Map of California*. Sacramento, CA.
- Division of Mines and Geology, State of California. 1967. *Explanatory Data, San Bernardino Sheet, Geologic Map of California*. Sacramento, CA.
- Drover, C.E. 1987. *Environmental Impact Evaluation: An Archaeological Assessment of the Air Force Village West, Riverside County, California*. Environmental Impact Report prepared for J.F. Davidson Associates, Riverside, CA, on behalf of the United States Government, Department of the Air Force.
- Earth Technology Corporation. 1985. *Air Force Village West Preliminary Geologic/-Geotechnical Study, Riverside County, CA*. Laguna Hills, CA.
- Federal Home Loan Bank of San Francisco. 1986. *Riverside-San Bernardino PMSA Housing Vacancy Survey*. San Francisco, CA.
- Institute of Transportation Engineers. 1979. *Trip Generation: An Informational Report*. Institute of Transportation Engineers, Washington, DC.
- J.F. Davidson Associates, Inc. 1987a. *Traffic Report for Air Force Village West, March Air Force Base, California*. Riverside, CA.
- J.F. Davidson Associates, Inc. 1987b. *Traffic Study, Orangecrest Project, Community Facilities District 86-1, City of Riverside*. Riverside, CA.
- Kroeber, A.L. 1925. *Handbook of the Indians of California*. Bureau of American Ethnology, Bulletin 78. U.S. Government Printing Office, Washington, DC.
- Laws, E.A. 1981. *Aquatic Pollution*. Wiley-Interscience Series of Tests and Monographs, John Wiley & Sons. New York, NY.
- Lee Wan & Associates, Inc. 1987. *Draft Report of Survey Findings: Asbestos Containing Materials in Ten Existing Facilities, March Air Force Base, Riverside, CA*. (2 volumes) Prepared for 22 CSG, March AFB, CA. Decatur, GA.
- Lee Wan & Associates, Inc. 1988. *Report of Survey Findings: Underground Storage Tank Survey at West March, March Air Force Base, Riverside, CA*. Prepared for 22 CSG, March AFB, CA. Decatur, GA.

- Lippincott, J.B., and O.G. Bowen, Engineers. 1941. *Completion Report on the Design and Construction of Camp Haan Anti-Aircraft Training Center, Riverside County, California*. Prepared by Lippincott and Bowen Engineers, Los Angeles. Report on file, U.S. National Records Center, Suitland, MD (Record Group 77, Entry 391, Box 113).
- March AFB. 1987. List of known hazardous materials on land conveyance parcel. March AFB Civil Engineering. March AFB, CA.
- March AFB Comptroller Division. 1987. *Economic Resource Impact Statement (ERIS), FY 1986*. March AFB, CA.
- Michael Brandman Associates, Inc. . 1987. *Assessment of Sensitive Biological Resources, Air Force Village West Project*. Riverside, CA.
- Moratto, M.J. 1984. *California Archaeology*. Academic Press, New York, NY.
- Munz, P. 1959. *A California Flora*. University of California Press. Berkeley, CA.
- Niehaus & Associates, Inc. 1987a. *Final Environmental Assessment for the Land Conveyance for the Construction of Three Facilities on March AFB, CA*. Santa Barbara, CA.
- Niehaus & Associates, Inc. 1987b. *Final Environmental Assessment of the Land Conveyance for the Proposed Air Force Village West Project, March AFB, CA*. Santa Barbara, CA.
- Noel, C. n.d. Camp Haan. One-page synopsis on file, March Field Museum, March AFB, CA.
- Oak Ridge National Laboratory. 1988. Personal communication with Joe Davis, Hazardous Waste Remedial Action Program (HAZWRAP), Oak Ridge, TN.
- O'Connell, J.F., P.J. Wilke, T.F. King, and C.L. Mix (eds.). 1974. *Perris Reservoir Archaeology: Late Prehistoric Demographic Change in Southern California. Archaeological Report 14*. California State Department of Parks and Recreation, Sacramento, CA.
- Patterson, T. 1954. "Proposed Air Force Site: Camp Haan Was Once Vast, Sprawling City of Soldiers." *Riverside Daily Press*. 20 March 1954.
- Patterson, T. 1971. *A Colony for California*. Press Enterprise Co., Riverside, CA.
- Perris Union High School District. 1986. *Perris Valley School Districts Long-Range Facility Plan Update*. Perris, CA.
- Provost Marshall General. 1944. *Prisoner of War Camp Labor Report, Camp Haan*. Records on File, U.S. National Archives, Washington, DC (Record Group 389).
- Provost Marshall General. 1945. *Prisoner of War Camp Labor Report, Camp Haan*. Records on File, U.S. National Archives, Washington, DC (Record Group 389).

- Provost Marshall General. 1946. *Prisoner of War Camp Labor Report, Camp Haan*. Records on File, U.S. National Archives, Washington, DC (Record Group 389).
- Riverside, City of. 1986a. *City of Riverside Annual Financial Report For Fiscal Year 1985-86*. Riverside, CA.
- Riverside, City of. 1985. *1982-1985 Industrial-Commercial Permit Activity and Major Developments, City of Riverside*. Riverside, CA.
- Riverside, City of. 1986b. *City of Riverside Final Budget For Fiscal Year 1986-87*. Riverside, CA.
- Riverside, City of. 1987. *Measure C: Citizens rights initiative to reduce costly urban sprawl, to reduce traffic congestion, to minimize utility rate increases, and to facilitate preservation of Riverside's citrus and agricultural lands, its scenic hills, ridgelines, arroyos and wildlife areas*.
- Riverside, County of. 1983. *Orangecrest Environmental Impact Report. No. 176*. Riverside, CA.
- Riverside, County of. 1986a. *Comprehensive General Plan, Second Edition*. Riverside, CA.
- Riverside, County of, Assessors Office. 1986b. *Tax Rates By Tax Rate Areas*. Riverside, CA.
- Riverside, County of, Economic/Community Development Department. 1987a. *Growth by Census Division 1950-1980; Population and Housing by City 1980*. Riverside, CA.
- Riverside, County of, Department of Roads. 1987b. Personal communication with Ed Studor, Transportation Planner (May; December). Riverside, CA.
- Riverside, County of, Department of Roads. 1988. Personal communication with Ed Studor, Transportation Planner (March). Riverside, CA.
- Riverside, County of, Planning Department. 1987. Personal communication with Steve Kupferman, Geologist (December). Riverside, CA.
- Roberts, R.B. 1987. *Encyclopedia of Historic Forts*. MacMillan Publishing Company, New York, NY.
- S.I.C. Corporation. 1985. *Orangecrest: A Specific Plan in the City of Riverside*. Los Angeles, CA.
- Santa Barbara, County of. 1984. *Environmental Impact Report for Hyatt Resort and Hotel*. Prepared by Environmental Science Associates, Inc. Santa Barbara, CA.
- Santa Barbara, County of. 1987. Personal communication with Richard Steadman, Hazardous Materials and Health Care Services, Santa Barbara, CA.

- Smith, J.P. and R. York. 1984. *Inventory of Rare and Endangered Vascular Plants of California*. Special Publication No. 1. (Third Edition). California Native Plant Society.
- Soil Conservation Service. 1971. *Soil Survey of Western Riverside Area, California*. U.S. Department of Agriculture, Washington, DC.
- South Coast Air Quality Management District. 1982. *Final Air Quality Management Plan*. Produced in association with Southern California Association of Governments. El Monte, CA.
- South Coast Air Quality Management District. 1987a. *Air Quality Handbook for Preparing Environmental Impact Reports*. El Monte, CA.
- South Coast Air Quality Management District. 1987b. *Air Quality Data 1985*. El Monte, CA.
- South Coast Air Quality Management District. 1987c. *Air Quality Data 1986*. El Monte, CA.
- Southern California Association of Governments. 1982. *Riverside County Growth Projection by Regional Statistical Area*. From SCAG-82 Growth Forecast. Los Angeles, CA.
- U.S. Air Force. (undated). *Environmental Assessment for the Proposed Lease Arrangement for Military Family Housing on March AFB*. March AFB, CA.
- U.S. Air Force. 1982. *Air Force Regulation 19-2, "Environmental Planning: Environmental Impact Analysis Process"*. Headquarters U.S. Air Force, Washington, DC. 20330 (10 August).
- U.S. Air Force. 1984a. *Installation Restoration Program Records Search for March AFB*. March AFB, CA.
- U.S. Air Force. 1984b. *Air Installation Compatible Use Zone (AICUZ), March Air Force Base, California*. Riverside, CA.
- U.S. Air Force. 1985a. *March AFB Comprehensive Plan*. March AFB, CA.
- U.S. Air Force. 1985b. *Preliminary Historical Inventory*. March AFB, CA.
- U.S. Air Force. 1986a. *Installation Restoration Program, Phase II--Confirmation/Quantification Stage 1*. March AFB, CA.
- U.S. Air Force. 1986b. *Report on a Cultural Resources Survey for Three Proposed Construction Locations on March Air Force Base*. Report prepared for 22 CSG/DEEV, March AFB, by L.W. Spanne, 1 STRAD/Environmental Task Force, Vandenberg AFB, CA.
- U.S. Air Force. 1987a. *Traffic Engineering Study*. MTMC Report SE86-Ca-39, prepared by the Military Traffic Management Command, March AFB, CA.

- U.S. Air Force. 1987b. Personal communication with Lt. John Laviolette, Civil Engineer. March AFB Civil Engineering. March AFB, CA.
- U.S. Air Force. 1987c. Personal communication with Dan Keppler, Chief Civil Engineer (August). March AFB Civil Engineering. March AFB, CA.
- U.S. Air Force. 1987d. Personal communication with Cindi Noel, March Field Museum (November), March AFB, CA.
- U.S. Air Force. 1988a. Base utility maps. On file, Civil Engineering Office, March AFB, CA.
- U.S. Air Force. 1988b. Personal communication with Marie Sands, Real Property Officer (March), March AFB Office of Real Property. March AFB, CA.
- U.S. Army. 1941-45. World War II Operations Records for the 101st Antiaircraft Brigade (CABR-101). Records on file, U.S. National Records Center, Suitland, MD (Box #17553).
- U.S. Army Corps of Engineers. n.d. Los Angeles District Historical File Summary [for Camp Haan]: Land Acquisition and Disposal Subsequent to 1 July 1940. File #3101, in three volumes, on file at the U.S. Army Corps of Engineers, Los Angeles District Office, Los Angeles, CA.
- U.S. Army Corps of Engineers. 1988. Personal communication with Dr. Martin Gordon, Historian, Office of the Chief of Engineers, U.S. Army Corps of Engineers (March), Ft. Belvoir, VA.
- U.S. Department of Commerce, Bureau of the Census. 1983. *1980 Census of Population*. Washington, DC.
- U.S. Department of Commerce, Bureau of Economic Analysis. 1986. "Regional Economic Information System." As cited by U.S. Army Corps of Engineers, Construction Engineering Research Laboratory, "Environmental Technical Information System, Economic Impact Forecasting System." Urbana, IL.
- U.S. Environmental Protection Agency. 1980. *Polychlorinated Biphenyls: An Alert for Food and Feed Facilities*. Toxic Substances, Washington, D.C.
- U.S. Environmental Protection Agency. 1985. *Guidance for Controlling Asbestos-Containing Materials in Buildings*. Exposure Evaluation Division, Office of Toxic Substances, Office of Pesticides and Toxic Substances. Washington, DC.
- U.S. House of Representatives. 1986. *National Defense Authorization Act for Fiscal Year 1987*. (H.R. Conference Report to accompany Senate Report 2638.) H.R. Rep. No. 1001, 99th Cong., 2nd Sess., Sec. 2735, pp. 241-242 (Oct 14, 1986). Washington, DC.
- U.S. National Records Center. 1988. Personal communication with Howard Wehman, archivist, U.S. National Records Center (January), Suitland, MD.

War Assets Administration. 1947. Notification of Spot Sale of Surplus Government Buildings, Camp Haan-Riverside Co., Calif. Record on file, Field Museum, March Air Force Base, CA.

War Department, Office of the Chief of Engineers. 1945. Camp Haan, California. Post War Utilization Studies, September 1945. Ms. on file, March Field Museum, March AFB.

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County of Riverside Office of Education	Pat Mathews
County of Riverside Environmental Health Department	Steve Hindy H. Ralph Luchs <i>Supervisory Sanitarian</i>
County of Riverside Fire Department	Phil Clinton <i>Fire Marshall</i>
County of Riverside Flood Control Office	John Kashuba Stuart McKibbin

County of Riverside Planning Department

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FEDERAL AGENCIES

Advisory Council on Historic Preservation
Bureau of Indian Affairs, Southern California Agency, Riverside
Bureau of Land Management, Riverside District Office
Soil Conservation Service, Riverside Field Office
United States Army Corps of Engineers, Los Angeles District
United States Fish and Wildlife Service, Laguna Niguel
United States Forest Service, San Bernardino National Forest

STATE REPRESENTATIVES AND AGENCIES

Honorable George Deukmejian, Governor
Honorable Alan Cranston, United States Senate
Honorable Pete Wilson, United States Senate
Honorable Al McCandless, United States House of Representatives
Honorable Robert Presley, California State Senate
Honorable Steve Clute, California State Assembly
Honorable David G. Kelley, California State Assembly
Honorable Norton Younglove, Riverside County Supervisory District

California Air Resources Board
California Department of Education
California Department of Transportation
California Department of Fish and Game
California Office of Historical Preservation
California State Clearing House
Native American Heritage Commission
Regional Water Quality Control Board--Santa Ana Region, Riverside
The Resources Agency of California
State Lands Commission

COUNTY AND CITY AGENCIES

City of Moreno Valley Planning Department
City of Perris Planning Department
City of Riverside Planning Department
City of Riverside Public Works Department
County of Riverside Assessor
County of Riverside Environmental Health Services
County of Riverside Fire Department
County of Riverside Flood Control and Water Conservation District
County of Riverside Parks Department
County of Riverside Planning Department
County of Riverside Road Department
County of Riverside Superintendent of Schools
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Local Agency Formation Commission, Riverside Office

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California Native Plant Society
Eastern Municipal Water District
Edgemont Community Services District
General Telephone Company of California
Metropolitan Water District
Moreno Valley Unified School District
Pacific Bell Telephone Company
Perris Union High School District
Riverside Central Library
Riverside City College
Riverside Unified School District
San Bernardino Valley Audubon Society
Sierra Club, San Geronio Chapter
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APPENDIX A
APPLICABLE RULES, REGULATIONS, AND STANDARDS

APPLICABLE RULES, REGULATIONS, AND STANDARDS

INTRODUCTION

Summaries of federal, state, and local laws and regulations that may be applicable to the proposed project are provided below. The National Environmental Policy Act (NEPA), Department of Defense Directive 6050.1, Air Force Regulation (AFR) 19-2, and the California Environmental Quality Act (CEQA) establish general environmental policy. Additional rules, regulations, and guidelines for specific environmental resource areas are also noted.

GENERAL ENVIRONMENTAL POLICY

National Environmental Policy Act (NEPA) PL91-190. Since becoming law in 1970, NEPA has required that all federal agencies prepare an environmental assessment (EA) and/or an environmental impact statement (EIS) to ascertain the environmental effects of proposed federal actions that may significantly affect the environment. The act created the President's Council on Environmental Quality (CEQ) to establish and revise codes that federal agencies can follow in preparing EA's and EIS's. The council also monitors federal agencies' compliance with NEPA, and publishes an annual environmental quality report for Congress.

Department of Defense Directive 6050.1. This directive provides details for the implementation of NEPA guidelines for all U.S. Department of Defense actions.

Air Force Regulation (AFR) 19-2. AFR 19-2 implements NEPA guidelines for U.S. Air Force actions.

California Environmental Quality Act (CEQA). CEQA requires that an environmental assessment (EA) be prepared for all major projects (minor projects, as defined in the act, receive categorical exemption from this law). If no significant environmental effects are anticipated, a negative declaration is issued; however, if potential significant effects could occur, an environmental impact report (EIR) must be prepared to further analyze these effects.

LAND USE

Executive Order 12372 - Intergovernmental Review of Federal Programs. This order is designed to ensure that federal agencies "make efforts to accommodate state and local elected officials' concerns" regarding federal development. It requires that these agencies consult with and solicit comments from state and local officials whose jurisdictions would be affected by federal action. In the event that local concerns cannot be accommodated, federal officials are to explain their decisions and reason for action "in a timely manner."

National Natural Landmarks Program. This program promotes the preservation of the nation's major wildlife and vegetation communities and areas of geologic importance.

GROWTH AND HOUSING

City of Riverside Measure C. City residents recently approved this measure which is designed to reduce "urban sprawl" (City of Riverside, 1987).

PUBLIC SERVICES AND FINANCE

PL81-874 and PL81-815, Impact Aid to Elementary and Secondary Schools. These programs authorize funding to compensate school districts for the cost of schooling children in areas adversely affected by the Atomic Energy Program. PL81-815 funds cover school construction costs while PL81-874 funds cover operating costs.

PUBLIC HEALTH AND SAFETY

Comprehensive Environmental Response, Compensation and Liability Act. This act, passed in 1980 by Congress, authorized \$1.6 billion to finance the cleanup of abandoned hazardous waste dump sites. The fund established by the act is commonly known as "superfund", and is financed by a tax on the receipt of hazardous waste at a qualified hazardous waste disposal facility and by a tax on crude oil and chemical feedstocks. The Superfund Amendments and Reauthorization Act (SARA), a law passed by Congress in 1986 to strengthen CERCLA, increased the amount of money in the fund from \$1.6 to \$8.5 billion over 5 years. CERCLA enables the EPA, which is responsible for hazardous substance regulation and cleanup, to recover cleanup costs from a "potentially responsible party". The power of CERCLA and SARA lies in the concept of "strict, joint and several liability": if a link is established between a hazardous material site and potentially responsible party(ies), the party(ies) can be held liable for the costs of cleanup of the site. The EPA has the authority to enforce the provisions of both laws. SARA also dictated that a list of the hazardous substances found at superfund sites as well as toxicological profiles of these substances must be prepared by the Agency for Toxic Substances and Disease Registry, in addition to their established function of performing health assessments at superfund sites and researching health effects.

Toxic Substances Control Act. Enacted in 1976 to enable the EPA to control exposure to harmful substances, this act allows the EPA to collect data on chemicals to evaluate their effect on health and environment, and to regulate the production and use of hazardous substances. The law was amended in 1986 to include the Asbestos Hazard Emergency Response Act, which requires school systems to inspect for and abate asbestos hazards found in school buildings. However, asbestos remains largely uncontrolled by the law.

Resource Conservation and Recovery Act. This act contains provisions for the safe treatment and disposal of wastes, and is the basic law for regulation of hazardous waste management practices. The regulations, administered by the EPA, define which wastes are hazardous and set standards for treatment, storage, and disposal facilities. Major amendments in 1984 called for banning land disposal of untreated hazardous waste within five and one-half years, and specified regulation of underground storage tanks.

Hazardous Materials Transportation Act. This act authorizes the Department of Transportation to regulate the shipping of hazardous wastes.

TRAFFIC

Riverside County Traffic Mitigation Measures. Riverside County imposes traffic mitigation measures on a project-by-project basis.

AIR QUALITY

Clean Air Act. The Air Quality Act of 1967 (amended 1977) legislates that air quality standards set by federal, state and county regulatory agencies establish maximum allowable emission rates and pollutant concentrations for sources of air pollution on federal and private property. The following measures are included in the Clean Air Act:

National Ambient Air Quality Standards (NAAQS), Title 40 CFR 50. These standards are designed to protect the public from harmful effects caused by contaminants which also may result in damage to materials, vegetation and decreased visibility. Established by the Environmental Protection Agency (EPA), these standards set maximum acceptable concentration levels for specific atmospheric pollutants. Short term average concentrations may not be exceeded more than once a year.

Prevention of Significant Deterioration (PSD) Regulations, 40 CFR 52.21. These regulations establish the maximum emission levels of pollutants by stationary sources in a particular geographic location. It does not apply to temporary sources (those active less than two years). These regulations affect two areas in the United States: Class I, national parks and wildlife areas; and Class II, areas of moderate industrial growth. PSD further regulates the amount of sulphur dioxide and total suspended particulates that can be emitted in each class area.

State Implementation Plan (SIP). The SIP is a measure which must be adopted by a state government for nonattainment areas, those areas which do not comply with the standards set by the NAAQS. Under the SIP, the state is required to design a policy which charts the process toward reducing pollution and gaining attainment for the area in question.

California Ambient Air Quality Standards (CAAQS). These standards were established by the California Air Resources Board (CARB) to set levels for concentrations of pollutants that may not be equaled or exceeded. Those contaminants with emission rates and levels not be exceeded are carbon monoxide, sulphur dioxide, nitrogen dioxide and PM-10.

Prevention of Significant Deterioration (PSD) Regulations. These regulations apply to new sources located in attainment areas. These regulations are:

Best Available Control Technology (BACT); required for sources of emissions with increases of 5 lb/h or more, for emissions of 50 lb/h or 55 lb/day of

carbon monoxide, and for emissions increases of certain noncriteria pollutants.

Modeling of impacts; it must be shown that sources in Class I areas or impact areas will not emit pollutants which exceed specific levels. Modeling of sources in these areas that have a net emissions increase of 5 lb/h of attainment pollutant or 20 lb/h of carbon monoxide is required. Sources emitting more than 20 lb/h are also required to model impacts even if they are not located in these areas.

Emission reduction; sources located in Class I areas or impact areas and emit reactive organic compounds, nitrogen oxides, sulphur oxides or particulate matter that exceed 10 lb/h are required to reduce emissions of existing sources to offset the overall release of pollutants. The existing sources affected by offsetting measures are to be within 15 miles of the proposed new source. Offsets are set at a ratio of 1.2:1.

Monitoring; source emissions increases exceeding 5 lb/h for particulate matter or 10 lb/h of other attainment pollutants are to be monitored during a 1 year preconstruction period if relevant data on emissions is not adequate. Monitoring is also required following construction to determine the effects of emissions.

NOISE

Noise Control Act. U.S. policy "to promote an environment free from noise harmful to health or welfare" is established under this act. The EPA developed noise criteria for the public health effects of different types and amounts of noise, and noise emission performance standards for major noise sources (such as construction and transportation vehicles, equipment and machinery).

Department of Housing and Urban Development (HUD) residential noise standards. This agency set standards for its residential developments at 65 dBA for all types of noise with the exception of rare noise generated by sonic boom, explosions, etc. Noise levels exceeding 75 dBA are not acceptable for HUD projects although areas registering noise levels between 65 and 75 dBA may be permitted if mitigation measures are applied.

GEOLOGY

Uniform Building Codes (UBC). These codes set design standards for buildings to withstand the effects of various geologic and seismic hazards.

SOILS

Soil Conservation and Domestic Allotment Act (7 USGS 128). This act empowers Congress to conserve national resources, and preserve farming and ranching resources.

Federal Soil Conservation Law (16 USGS 509a). This law provides preventive measures against soil erosion using engineering, cultivation and change of land use methods.

Executive Order 11207 -- Coordination of Federal Programs Affecting Agricultural and Rural Area Development. This order facilitates consistency among federal departments and agencies in managing agricultural and rural area development programs.

HYDROLOGY, GROUNDWATER, AND WATER QUALITY

Clean Water Act. The goal of the Federal Water Pollution Control Act of 1972 was to "restore and maintain the chemical, physical and biological integrity of the Nation's waters." The EPA was required to establish federal limits on the amounts of specific pollutants that could be released by municipal and industrial facilities. These "effluent limitations" are based on the level of cleanup that could be achieved using existing technology, and are written into "national pollutant discharge elimination system" (NPDES) permits issued to all dischargers. The 1987 Water Quality Act amendments direct EPA and state officials to supplement existing, nationwide technology-based standards with a water-quality based approach to control excessive levels of toxic pollutants remaining in some waters. States must identify waters that are not expected to meet water quality standards, even after technology-based controls have been put into effect. The sources responsible for the toxic pollution must be identified and strategies proposed for reducing discharges of toxic pollutants from these facilities. Similarly, states are required to identify waters that are not expected to meet water quality standards because of non-point source pollution and develop programs for reducing the polluted runoff.

Safe Drinking Water Act (40 USC 100 et seq.). This act establishes the amount of concentrated contaminants allowable in public drinking water. Limits to contaminants that affect the water's flavor but not necessarily human health, are contained in the secondary drinking water regulations.

California Water Resources Control Board. This board heads a network of nine regional boards that adopt regional water quality control plans, prescribe waste discharge requirements, and perform other water quality control functions within their respective regions, subject to state board review or approval. The EPA has delegated to the Water Resources Control Board responsibility for the NPDES permit program for both firms and federal facilities. Each regional board has adopted area-specific water quality standards.

VEGETATION

Endangered Species Act. This act, which became law in 1973 and was amended in 1984, is intended "to provide a program for the conservation of threatened and endangered species of plants and animals and the habitats in which they are found". Section 7 requires consultation with the Departments of Commerce and Interior (who jointly administer the law) to determine whether endangered and threatened species are known to have critical habitats on or in the vicinity of a site proposed for development.

National Wildlife Refuge System Administration Act of 1966. This act provides for the establishment of wildlife refuges to preserve and develop the habitat of wildlife and endangered or threatened species.

WILDLIFE

Endangered Species Act. This act, which became law in 1973 and was amended in 1984, is intended "to provide a program for the conservation of threatened and endangered species of plants and animals and the habitats in which they are found". Section 7 requires consultation with the Departments of Commerce and Interior (who jointly administer the law) to determine whether endangered and threatened species are known to have critical habitats on or in the vicinity of a site proposed for development.

Bald and Golden Eagles Protection Act (16 USC 668). This act prohibits possessing, killing, transporting or otherwise disturbing bald and golden eagles, their nests and eggs. A survey must be conducted of the site and vicinity for habitats containing bald and golden eagles. If they are found the Fish and Wildlife Service must be consulted to evaluate ways to avoid or mitigate potential effects.

National Wildlife Refuge System Administration Act of 1966. This act provides for the establishment of wildlife refuges to preserve and develop the habitat of wildlife and endangered or threatened species.

Migratory Bird Conservation Act (10 USC 701 et seq.). This act protects migratory, game, and insectivorous birds and all seabirds from being disturbed or put in danger.

Fish and Wildlife Coordination Act (16 USC 661-667). This act requires consultation with the Fish and Wildlife Service to consider fish and wildlife resources at or in the vicinity of the site. It then requires action to be taken to prevent loss and damage to these resources and to provide for their development and improvement. The act also directs federal, state, public and private agencies to coordinate their fish and wildlife management projects to ensure consistent, efficient conservation practices.

CULTURAL RESOURCES

Antiquities Act of 1906 (34 Stat. 225; 16 USC 431). The Antiquities Act requires the investigation and protection of prehistoric and historic remains, including paleontological resources, found on federal lands. Unauthorized destruction or use of these remains or resources is a criminal offense.

Historic Sites Act of 1935 (49 Stat. 666; 16 USC 461-467). The Historic Sites Act provides for the preservation of important archaeological and historic sites; the establishment of national historic landmarks; and promotes the preservation and maintenance of cultural assets. Violation of the ordinances regulating sites and resources is a criminal offense.

National Historic Preservation Act of 1966 (NHPA) (80 Stat. 915; 16 USC 470). This act encompasses a wide range of programs and regulations designed to preserve historic objects, structures and sites of national historic interest. The act promotes the restoration and reconstruction of historic sites and objects through state, local and private agencies and provides for the inclusion of state and local cultural resources in the National Register of Historic Places. In conjunction with the National Register, the act coordinates federal funding for the National Trust for the Historic Preservation to obtain and preserve resources in the National Register; provides guidelines to federal agencies whose projects may affect resources or potential resources listed in the National Register; and establishes the Advisory Council on Historic Preservation.

Archaeological and Historical Preservation Act of 1974 (88 Stat. 174). This act provides funding for the protection of historical and archaeological remains and sites affected by federal development at reservoirs and dams.

American Indian Religious Freedom Act of 1978 (92 Stat. 469; 42 USC 1996). This act requires federal agencies to consult with native American religious leaders in setting policy and goals for the protection and preservation of Indian culture and customs. The act ensures U.S. protection of American Indians' right to practice native traditional religions.

Archaeological Resources Protection Act (ARPA) of 1979 (93 Stat. 721; 16 USC 470). This act supplements the Antiquities Act of 1906 and makes the removal, sale and transport of archaeological resources without proper authorization a criminal offense. The act further provides for the issuing of permits for study of archaeological resources and allows for the withholding of site information when necessary.

Archaeological Resources Protection Act of 1979, Final Uniform Regulation (32 CFR 229, Jan. 6, 1984). This act provides consistent measures for the execution of the Archaeological Resources Protection Act of 1979, which protects and preserves archaeological resources on both federal and Indian lands.

Findings and Policy of National Historic Preservation Act of 1980 (94 Stat. 2987). This act contains amendments to the Historic Preservation Act of 1966, thus maintaining the National Register of Historic Places which lists resources of national historical interest. The act authorizes the Department of the Interior to provide guidance for the preservation, restoration and documentation of important national resources and provides that each federal agency have a preservation officer; requires that project planning costs account for preservation, cataloging and assessment costs; and allows for the withholding of information on historic resources in appropriate instances.

National Register of Historic Places (36 CFR 60). This regulation creates the National Register and describes the methods for determining resources to be included in the National Register.

Criteria for Comprehensive Statewide Historic Surveys and Plans (36 CFR 62). These criteria provide detailed descriptions of statewide survey processes, preservation and protection plan development for historic sites, and appointment procedures, qualifications, and responsibilities of the State Historic Officer and staff.

Determination of Eligibility for Inclusion in the National Register for Historic Places (936 CFR 63). These guidelines for determination provide the method in which an historic property or resource gains inclusion in the National Register.

National Historic Landmarks Program (936 CFR 65). This program establishes criteria used by the Department of the Interior to define properties and objects of national historic interest; the method used in determining those resources and maintaining the characteristic quality of national landmarks.

Protection of Historic and Cultural Properties (36 CFR 800). This regulation provides direction to the State Historic Preservation Officer and affected federal agencies in protecting historic and cultural resources.

Executive Order 11593, Protection and Enhancement of the Cultural Environment (May 13, 1979). This order provides federal guidance and impetus in the preservation and maintenance of national historic and cultural resources; requires federal agencies to preserve resources in possession of the federal government as well as promote the protection of state, local and privately owned properties; and provides for the recognition, cataloging, and nomination of resources to the National Register by federal agencies.

Archaeological and Historic Preservation: Secretary of the Interior's Standards and Guidelines (September 29, 1983). These standards and guidelines contain procedures and technical data on the preservation of archaeological and historic resources for federal agencies and other involved parties.

Treatment of Archaeological Properties: A Handbook (November 5, 1980). This handbook, published by the Advisory Council on Historic Preservation, provides methods and procedures for the treatment of archaeological objects and resources. It is designed to guide the State Historic Preservation Officer and staff and other federal agencies in following the Protection of Historic and Cultural Properties regulations.

Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings. These standards and guidelines provide federal agencies and other involved parties with methods and technical advice for the rehabilitation of federally owned or managed historic buildings.

California Environmental Quality Act (CEQA) of 1970 (13 PRC; 2100 et seq.). CEQA contains sections providing for the identification of environmental impacts and effects to objects, structures or locations that are significant in California history. The CEQA guidelines, which accompany the act, provide definitions of significant effects to cultural resources.

California Senate Bill 297. This bill provides amendments to state codes concerning Native American burial sites. The amendments provide for the protection of burial sites from being disturbed or intentionally destroyed; specifies the process to be followed if an Indian burial site is found during project development or on private property; and includes penalties for vandalism of sites. Under these amended regulations, the Native American Heritage Commission (NAHC) is authorized to catalog existing burial sites and contribute to settlements regarding burial sites and

artifacts affected by project development.

California Senate Concurrent Resolution No. 43, Chapter 87. This resolution requires all state agencies to cooperate with government and private efforts in reporting all archaeological discoveries of Native American culture in California to the Department of Parks and Recreation. These agencies are also directed to preserve these findings and resources to the extent possible within their power.

California State Executive Order B-64-80. This order outlaws the sale or inadvertent modification of property and cultural resources that are of potential significance. State agencies are instructed to catalog all important cultural sites in their ownership and jurisdiction.

State Historical Preservation Officer Checklist Guidelines. These guidelines are designed to assess archaeological testing/research programs, the method of determining site significance and the quality of mitigation impact reports.

APPENDIX B

**U.S. FISH AND WILDLIFE SERVICE LIST OF CANDIDATE
SPECIES THAT MAY OCCUR ON MARCH AFB**



United States Department of the Interior

FISH AND WILDLIFE SERVICE

LAGUNA NIGUEL FIELD OFFICE
24000 Avila Road
Laguna Niguel, California 92656

August 5, 1987

Katherine S. Cowell, Environmental Planner
Niehaus and Associates
3704 State Street, Suite 200
Santa Barbara, California 93105

Re: Endangered Species Information for the Proposed Land Exchange and
Facilities Construction on March Air Force Base. (#1-6-87-SP-208)

Dear Ms. Cowell:

This is in response to your letter, dated July 2, 1987 and received by us on July 7, 1987, requesting information on listed and proposed endangered and threatened species which may be present within the area of the subject project in Riverside County, California.

Your request and this response are made pursuant to Section 7(c) of the Endangered Species Act of 1973, as amended.

To the best of our present knowledge there are no listed or proposed species occurring within the area of the subject project. I have enclosed a list of candidate species (Enclosure A) presently under review by this Service for consideration as endangered or threatened. Only listed species receive protection under the Act. However, candidate species should be considered in the planning process in the event they become listed or proposed for listing prior to project completion. You are not required to prepare a biological assessment as described in Section 7(c) of the Act. If you determine that your project is likely to affect a candidate species, you may wish to request technical assistance from this office.

We appreciate your concern for endangered species and look forward to continued coordination with you. If you have further questions, please contact me or Dick Zembal of our Laguna Niguel Field Office at FTS 796-4270.

Sincerely,

for Nancy M. Kaufman
Project Leader

Enclosure

LISTED AND PROPOSED ENDANGERED AND THREATENED SPECIES AND
CANDIDATE SPECIES THAT MAY OCCUR IN THE AREA OF THE PROPOSED

Land Exchange and Facilities Construction
on March Air Force Base
1-6-87-SP-208

CANDIDATE SPECIES

Mammals

Stephen's kangaroo rat	<u>Dipodomys stephensi</u> (1)
Greater mastiff bat	<u>Eumops perotis californicus</u> (2)
Los Angeles pocket mouse	<u>Perognathus longimembris brevinasus</u> (2)

Birds

Swainson's hawk	<u>Buteo swainsoni</u> (2)
Ferruginous hawk	<u>Buteo regalis</u> (2)

Reptiles

Orange-throated whiptail	<u>Cnemidophorus hyperythrus</u> (2)
San Diego horned lizard	<u>Phrynosoma coronatum blainvillei</u> (2)

Plants

Munz's onion	<u>Allium fimbriatum</u> var. <u>munzii</u> (2)
Thread-leaved brodiaea	<u>Brodiaea filifolia</u> (2)
No Common Name	<u>Caulanthus simulans</u> (2)
Many-stemmed live-forever	<u>Dudleya multicaulis</u> (2)
Moreno Currant	<u>Ribes canthariforme</u> (2)

- (E) -Endangered (T) -Threatened (CH) -Critical Habitat
- (1) -Category 1: Taxa for which the Fish and Wildlife Service has sufficient biological information to support a proposal to list as endangered or threatened.
- (2) -Category 2: Taxa which existing information indicates may warrant listing, but for which substantial biological information to support a proposed rule is lacking.
- (3) -Category 3(c): Taxa more common than previously thought, no longer being considered for a listing proposal at this time.

APPENDIX C
ARCHAEOLOGICAL SITE RECORDS

ARCHAEOLOGICAL SITE RECORD

Permanent Trinomial: CA-RIV-3380

Page 1 of 3

1. County: Riverside
2. USGS Quad: Steele Peak (1967) 7.5', Photorevised 1973
3. UTM Coordinates: Zone 11: 471700 mE 3748010 mN
4. Twp. 3 S Rng. 4 W, SW 1/4 SE 1/4 SE 1/4 SW 1/4 Section 28
5. Map Coordinates: mmS mmE
6. Elevation: 1715'
7. Location: On granitic bedrock boulder approximately 15 m. west of Ferguson Avenue, and 40 m. north of the intersection between Ferguson Avenue and 9th Street
8. Prehistoric: X Historic: Protohistoric:
9. Site Description: Two grinding features located on granitic bedrock boulder
10. Area: 19.4 m(N/S) x 11.0 m (E/W); Method of Determination: Tape
11. Depth: Surface
12. Features: Two milling features
13. Artifacts: None observed
14. Non-artifactual Constituents: None
15. Date Recorded: 7 November 1987
16. Recorder: L. Gorenflo, N. Gale
17. Affiliation and Address: ROBERT D. NIEHAUS, INC., Santa Barbara
18. Human Remains: None observed
19. Site Integrity: Boulder is exfoliating (heavily in places)
20. Nearest Water: Seasonal drainage approximately 500 m. to the southeast
21. Vegetation Community (site vicinity): Coastal sage; grass, following plowing, nearby
22. Vegetation (on site): None
23. Soil: Decomposing granite
24. Surrounding Soil: Decomposing granite, brown loam
25. Geology: Flood plain
26. Landform: Terrace
27. Slope: 2% east/southeast
28. Exposure: Open
29. Landowner and Address: U.S. Air Force, March Air Force Base, California
30. Remarks: Area 75 m to the northwest is cultivated; boulder is heavily weathered
31. References: None
32. Name of Project: Contract # F25600-88-D0002
33. Type of Investigation: Environmental Impact Statement
34. Site Accession Number: N/A Curated at: N/A
35. Photos: One Taken by: L. Gorenflo
36. Photo Accession: March EIS On File at: ROBERT D. NIEHAUS, INC.,
Cultural Resources File Santa Barbara

N/A: not available

ARCHAEOLOGICAL SITE MAP

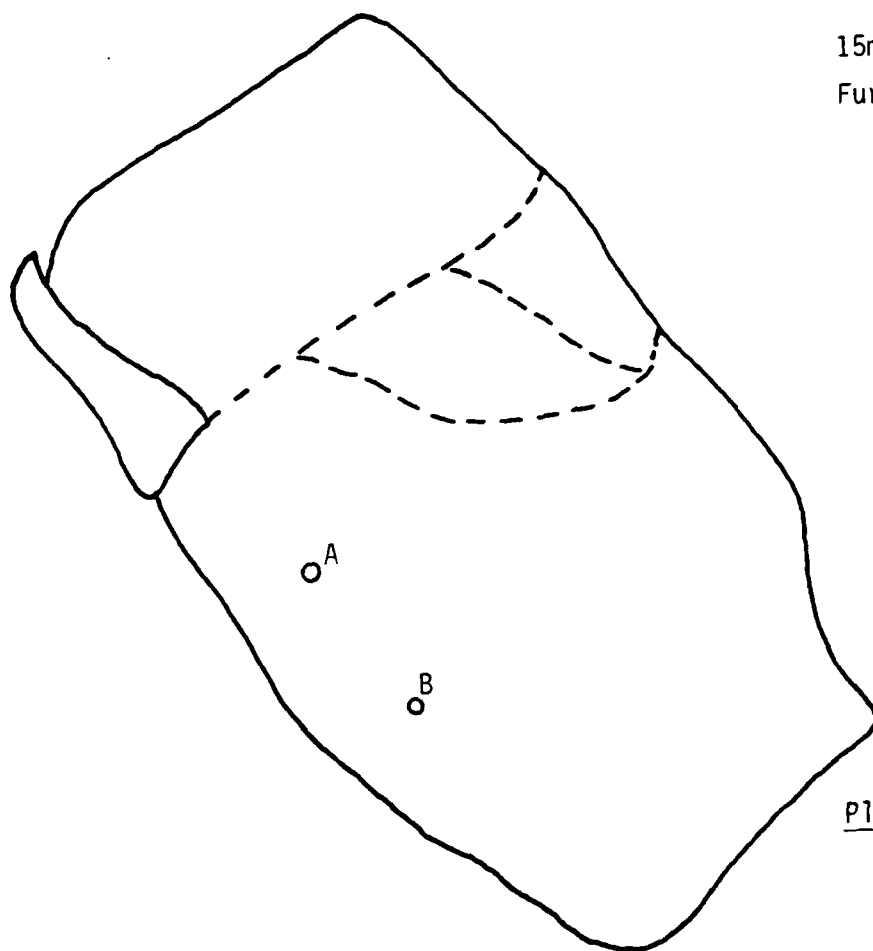
Permanent Trinomial: CA-RIV-3380 / Nov. 1987

USGS Map: Steele Peak (1967) 7.5'

Recorder: L. Gorenflo

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15m to
Furgeson Ave. →



Plan View

A: Milling feature
(21cm diameter)

B: Milling feature
(18cm diameter)

----: fissures in
boulder surface

↑ North

0 1m



Side View

(looking southwest)

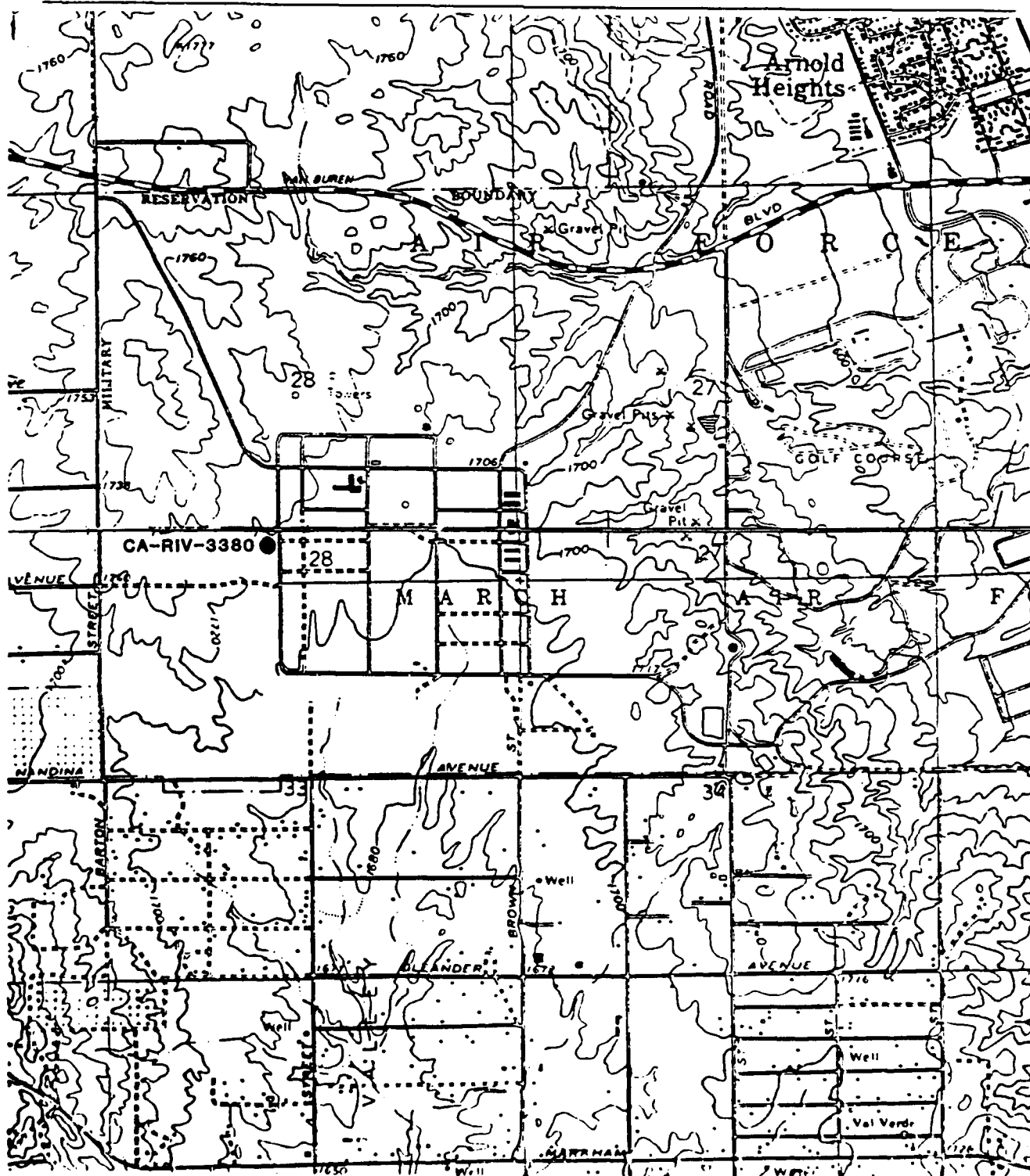
ARCHAEOLOGICAL SITE MAP

Permanent Trinomial: CA-RIV-3380 / Nov. 1987

USGS Map: Steele Peak (1967) 7.5'

Recorder: L. Gorenflo

Page 3 of 3



ARCHAEOLOGICAL SITE RECORD

Permanent Trinomial: CA-RIV-3381

Page 1 of 3

1. County: Riverside
2. USGS Quad: Steele Peak (1967) 7.5', Photorevised 1973
3. UTM Coordinates: Zone 11: 471690 mE 3748000 mN
4. Twp. 3 S Rng. 4 W, SW1/4 SE 1/4 SE 1/4 SW 1/4 Section 28
5. Map Coordinates: mmS mmE
6. Elevation: 1715'
7. Location: On granitic bedrock boulder approximately 25 m. west of Ferguson Avenue, and 30 m. north of the intersection between Ferguson Avenue and 9th Street
8. Prehistoric: X Historic: Protohistoric:
9. Site Description: One grinding feature located on fine-grained granitic bedrock boulder
10. Area: 4.4 m(N/S) x 1.3 m (E/W); Method of Determination: Tape
11. Depth: Surface
12. Features: One very shallow milling feature
13. Artifacts: None observed
14. Non-artifactual Constituents: None
15. Date Recorded: 7 November 1987
16. Recorder: L. Gorenflo, N. Gale
17. Affiliation and Address: ROBERT D. NIEHAUS, INC., Santa Barbara
18. Human Remains: None observed
19. Site Integrity: Boulder is exfoliating
20. Nearest Water: Seasonal drainage approximately 500 m. to the southeast
21. Vegetation Community (site vicinity): Coastal sage; grass, following plowing, nearby
22. Vegetation (on site): None
23. Soil: Decomposing granite
24. Surrounding Soil: Brown loam
25. Geology: Flood plain
26. Landform: Terrace
27. Slope: 0%
28. Exposure: Open
29. Landowner and Address: U.S. Air Force, March Air Force Base, California
30. Remarks: Boulder is quite fine grained; grinding feature is defined by a smooth, light-colored area.
31. References: None
32. Name of Project: Contract # F25600-88-D0002
33. Type of Investigation: Environmental Impact Statement
34. Site Accession Number: N/A Curated at: N/A
35. Photos: One Taken by: L. Gorenflo
36. Photo Accession: March EIS On File at: ROBERT D. NIEHAUS, INC., Santa Barbara Cultural Resources File Santa Barbara

N/A: not available

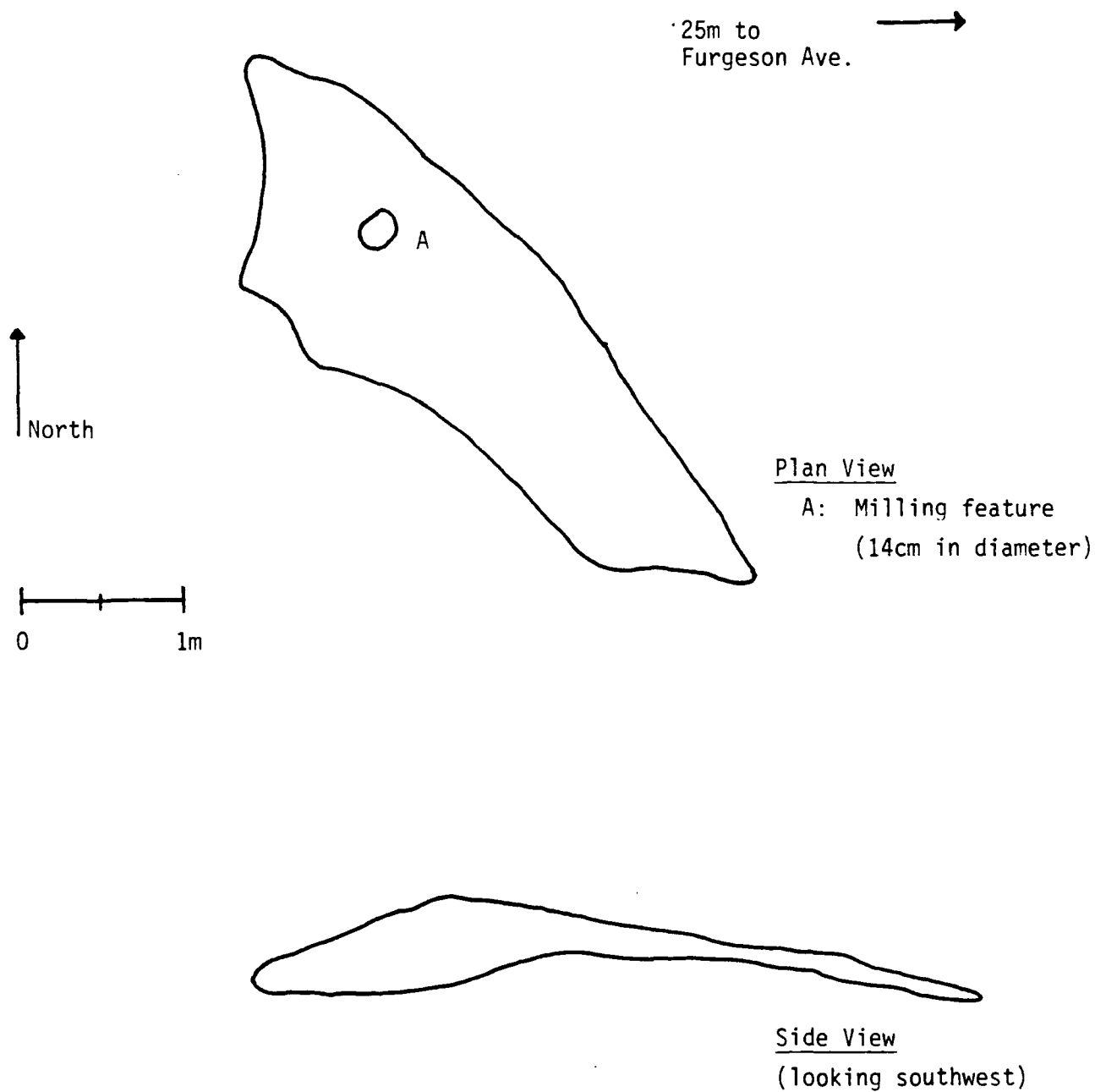
ARCHAEOLOGICAL SITE MAP

Permanent Trinomial: CA-RIV-3381/ Nov. 1987

USGS Map: Steele Peak (1967) 7.5'

Recorder: L. Gorenflo

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ARCHAEOLOGICAL SITE MAP

Permanent Trinomial: CA-RIV-3381 / Nov. 1987

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Recorder: L. Gorenflo

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